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Training Assistance for Caregivers Working with Students with Traumatic Brain Injury

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Training Assistance for Caregivers Working with Students with Traumatic Brain Injury

by

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS v

ABSTRACT vi

CHAPTER

I. INTRODUCTION 1

II. REVIEW OF LITERATURE 5

Traumatic Brain Injury Overview 6

Dysfunction Caused by Traumatic Brain Injury. 8

Strategies to Assist Students with Brain Injury Dysfunction 17

Family Issues 23

The Role of Occupational Therapy 25

Adult Learning 27

Conclusion 28

III. METHODOLOGY 29

IV. PRODUCT 32

V. SUMMARY 227

APPENDIX 229

REFERENCES 236

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ABSTRACT

Students who have suffered a traumatic brain injury (TBI) often require assistance from a variety of professionals and staff to complete their daily routines. Frequently it is a classroom assistant (paraprofessional), under the direction of a teacher, who attends to the student's basic and daily needs. Teachers and their assistants may receive some general training, but assistants, especially, are seldom offered an opportunity to attend trainings specific to managing the needs, difficulties, and behaviors that they are likely to encounter in their students. Unfortunately, according to J. Shulz, Training Director and Special Education Services Coordinator for Natrona County School District #1, "Nothing is available commercially to offer training to school staff with regard to managing and helping students with traumatic brain injury in the educational setting" (personal communication, February 15, 2006).

Based on Ms. Schulz's input plus a literature search and review, this author concluded that there is a need for such a product in the educational setting. Other significant findings include the fact that pediatric brain injury is a major public health concern (Yeates in Ward, Shum, Dick, McKinlay, & Baker-Tweeney, 2003); that older children ages 14-18 with TBI demonstrate a greater number of behaviors (Poggi, et al., 2003); students experience social barriers in school and structured community events there are inadequate or nonexistent programs at school (Bedell & Dumas, 2004); and families encounter many problems associated with lack of information (Wade, Taylor, Drotar, Stancin, Yeates, & Minich 2003).

The purpose of this project is to develop training modules for teachers and assistants that are based on the principals of adult learning and that contain material they can use to better understand and serve their students with brain injury. The first training module gives the participants a general overview of TBI and the impact it can have on a student. Information included in the consecutive training modules addresses the most commonly found difficulties that are experienced by adolescent students who have a diagnosis of TBI. The difficulties that were identified included: memory, sensory integration, behavior, and social issues. A section on family concerns was included because the family situation can directly affect the student's state of mind and physical condition. A description of occupational therapy assessment is included so that staff can learn about factors that support educational efforts such as sensory integration, visual perception, and functional skills. The theory of Occupational Adaptation (Kramer, Hinojosa, & Brasic-Royeen, 2003) was a foundational guide for the project. Its emphasis on adaptive capacity, or a person's ability to recognize a need for change, fits ideally with the acquisition of new knowledge that the target audience will receive.

It is recommended that the project be implemented, and data collected from the pre- and post-test information presented on each module. A follow-up survey could be used to further refine and expand the training modules. In the future, information regarding additional deficits such as motor problems could be added, as well as sections to help more severely impaired students

CHAPTER I

INTRODUCTION

Teachers and paraprofessionals (paras) in classrooms today often receive very little detailed information about students entering their classrooms. In the academic setting, paras are expected to assist the students with their daily work, to carry out activities with students under the direction of the classroom teachers, and to do data collection on student performance. Assistance provided a student by a para can also include feeding and other self-help skills when the student has more significant involvement. Paraprofessionals are seldom offered an opportunity to attend specialized trainings specific to dealing with the needs and behaviors that they are likely to encounter in their student charges. Frequently the student with traumatic brain injury (TBI) is returning to school after recent release from a hospital or rehabilitative facility. It is very difficult to anticipate and understand all the behaviors and other difficulties that the student may exhibit upon return to school. Teachers often feel poorly prepared to deal with the uncertainties surrounding these returning or new students to their classrooms, and as a result of this uncertainty, they are unable to offer the training and support that the paraprofessionals in their classroom need to deal with this population of students.

Findings from a review of current research and literature, presented in Chapter II, indicate that there are few, if any, commercially prepared training materials on the market today to assist school staff with information regarding what to typically expect from a student, especially the adolescent population, with a traumatic brain injury. There is a

focus on the adolescent population because according to Poggi, et al. (2003), older children, adolescents, manifest a greater number of behavioral problems than do younger children.

The purpose of this project is to develop training modules for teachers and paras, with a focus on students with TBI. In order to have validity, the training modules need to be based on current research and literature. This literature review, in Chapter II, is organized to first define the most frequently occurring types of traumatic brain injury and the resultant manifestations as seen in the adolescent population. It describes how those manifestations affect a child's performance in their student role. Next, caregiver concerns are addressed; and then information detailing what type of training is currently available for staff in the school setting is reviewed. Finally, best approaches to facilitate adult learning are examined to provide an efficient means of offering training to staff members. It is important that staff members have a good base of understanding of types of brain injury, typical manifestations they will see in students with brain injuries, and to have some basic strategies for dealing with these manifestations as they occur.

The Occupational Adaptation frame of reference was used to develop the information presented in this scholarly project. Occupational adaptation is generally defined as "a series of actions and events that unfolds as an individual is faced with an occupational challenge that occurs as the result of person/environment interactions within an occupational role. This process exists to enable the individual to respond adaptively and masterfully, that is, to meet both the self-produced (internal) role expectations and environmentally produced (external) role expectations" (Schkade, & Shultz, 2003, p. 185). According to Schkade and Schultz, successful occupational adaptation is

dependent on adaptive capacity, which is the individual's ability to recognize the need for change. Once this need is recognized, the individual seeks our new ways to interact with the environment. This interaction is called adaptive response. Then, the adaptive response is evaluated, and either rejected as unsuccessful or integrated into the person for ongoing use . Interventions for this frame of reference focus on "enhancing the health and strength of the subjects internal adaptive capacity so they can maximize their participation" (p. 209).

With regard to occupational adaptation, four populations in the school setting may be positively affected by implementation of the information provided in these training modules. First, the teachers and paras who attend the training have identified an area in their interactions with students where they perceive that a change would be beneficial. They will receive strategies to try to improve their interactions with their students with TBI. As a result of this training, students who benefit from the strategies will become more aware of the benefits of change and may desire more change (increased adaptive capacity). Third, student interactions with peers may be enhanced, as peers learn strategies to better understand their friends with brain injury, and as the students with TBI learn better coping strategies and social skills. Last, benefits from this training may reach the family level, improving interactions in the home. Specialized training to assist students with brain injury will improve the academic experience for the student, as well as increasing the efficiency of classroom operations. Social interactions on all levels will become more pleasant and meaningful. Family interaction with school staff will be encouraged, and input from all persons involved will be incorporated into an individualized program for the student with TBI.

As stated previously, in order to support the need for, and content of this training, a review of current research and literature was completed, which is presented in Chapter II of this document. In addition to the literature review, input for the product was obtained from other school district personnel. Chapter III of this project outlines the methods used to develop the product which is presented in its entirety in Chapter IV. Chapter V summarizes the findings of the project, and provides suggestions for implementation of the training modules and for further study.

CHAPTER II

LITERATURE REVIEW

During the course of an average school day, many students who have suffered a traumatic brain injury (TBI) require assistance from a variety of professionals and staff to complete their daily routines. Depending upon the severity of the student's disability, it is often a classroom aide, under the direction of a teacher, who attends to the student's basic and other needs. Teachers and their assistants (paraprofessionals or paras) may receive some general training provided by the school district in which they work, but are seldom offered an opportunity to attend specialized trainings specific to dealing with the needs and behaviors that they are likely to encounter in their student charges. This can lead to a sense of helplessness and inefficiency, and unfortunately to a lesser standard of care for the student. A well-informed and confident staff is vital to student success.

Teachers in classrooms today often receive very little detailed information about students entering their classrooms. Frequently the student with TBI is returning to school after recent release from a hospital or rehabilitative facility. It is very difficult to anticipate all the behaviors and other difficulties that the student may exhibit upon return to school. Teachers often feel poorly prepared to deal with the uncertainties surrounding these returning or new students to their classrooms. According to J. Shulz, Training Director and Special Education Services Coordinator for Natrona County School District #1, "Nothing is available commercially to offer training to school staff with regard to managing and helping students with traumatic brain injury in the educational setting"

(personal communication, February 15, 2006). Para-educators are required to take a nationally prepared exam, called the "Para-Pro", in order to qualify to assist teachers and related service providers with students in special education. Ms. Schulz stated that, "The Para-Pro does not require the assistant to know anything about background information for special education students. This would include information on TBI, as well as other diagnoses. It only requires them to have an understanding of how to assist with teaching reading, writing, and math".

The purpose of this project is to develop training modules for teachers and paras, with a focus on students with TBI. In order to have validity, the training modules need to be based on current research and literature. This literature review is organized to first define the most frequently occurring types of traumatic brain injury and the resultant manifestations as seen in the adolescent population. It will describe how those manifestations affect a child's performance in their student role. Next, caregiver concerns will be addressed, with information detailing what type of training is currently available for staff in the school setting. Finally, best approaches to facilitate adult learning will be examined to provide efficient means of offering training to staff members. It is important that staff members have a good base of understanding of types of brain injury, typical manifestations they will see in students with brain injuries, and to have some basic strategies for dealing with these manifestations as they occur.

Traumatic Brain Injury Overview

"Pediatric traumatic brain injury (TBI) is a major public health concern. It is a leading cause of death among the young and results in considerable neurobehavioral morbidity (Yeates, as cited in Ward, Shum, Dick, McKinlay & Baker-Tweeney, 2003, p.

471). According to the Centers for Disease Control report, Incidence Rates of Hospitalization Related to Traumatic Brain Injury, in 2002 for the age group 15-24, 103.3 per 100,000 individuals suffered some type of traumatic brain injury. Motor vehicle accidents (60.4) and assaults (14.5) were the leading causes (Centers for Disease Control, 2006).

Traumatic brain injury is defined as "an insult to the brain, not of degenerative or congenital nature caused by an external physical force that may produce a diminished or altered state of consciousness, which results in impairment of cognitive abilities or physical functioning. It can also result in disturbance of behavioral or emotional functioning" (Brain Injury Association, n.d.).

Types of brain injury include, but are not limited to; traumatic brain injury, concussion, hypoxic-ischemic encephalopathy(HIE), and anoxic brain injury. According to Koh, Cassidy, and Watkinson (2003), concussion is defined as "a traumatically induced physiological disruption of brain function with a short period of altered or loss of consciousness...Although the consequences of a concussion are controversial, there is concern about cumulative effects and the risk of developing long-term behavioral or cognitive problems from multiple concussions" (p. 901). Concussions are frequently thought to be mild or inconsequential injuries. However, recent findings suggest that their effects are underestimated. Marked long-term effects or changes can occur from one or multiple concussions over time.

Hypoxic-ischemic encephalopathy (HIE) is decay of brain tissue caused by an obstruction of blood flow, which results in reduced or absence of oxygen in the brain. Corpus callosum atrophy has been reported in children suffering HIE. Damage to the

corpus callosum area correlates strongly with several measures involving processing speed and visuospatial function (Vergen & Levin as cited in Maneru, et. al., 2003, p. 1004).

Anoxic brain injury is an insult caused by reduction of oxygen to the brain. It can be caused by cardiac arrest, respiratory failure or hypotenson. Graves, as cited in Shah, Al-Adavi, Dorvlos, and Burke (2004, p. 111) wrote that anoxia is known to cause diffuse brain damage and generally affects sub-cortical regions such as the basal ganglia, hippocampus and limbic structures. Caine, as cited in Shah, et al., (p. 111) noted that impairments following anoxic injury include memory, personality, and behavior problems. The more diffuse the damage, the poorer the prognosis can be for the patient.

Dysfunctions Caused by Traumatic Brain Injury

Traumatic brain injury can cause a student to have problems in all performance skills and patterns required in the role of student. Major areas of student participation and the TBI-related dysfunctions are described in the following sections.

Memory Dysfunction

The structure of the brain is physically damaged in TBI, and associated brain functions are changed as a result. "Client factors are those that reside within the client and that may affect performance in areas of occupation. Client factors include body functions and body structures" (American Occupational Therapy Association [AOTA], 2002, p.624). Client factors directly affect all areas of education for the child with TBI. One facet of brain function that is frequently affected by TBI is memory. Problems with memory can manifest in a wide variety of ways.

Ward, Shum, Dick, and Baker-Tweeney (2004) describe three types of memory that can be affected by a brain injury: explicit memory, implicit memory, and prospective memory. "Explicit memory mediates functions such as remembering names, what occurred 10 minutes ago, and items from a list" (p. 472). Graf and Schacter, in Ward et al. stated that "implicit memory which requires no conscious awareness and when assessed, attention is not drawn to prior learning events. Implicit memory mediates such processes as conditioning, priming, and procedural learning" (p. 472). Prospective memory loss can significantly impact the educational life of a student. This type of memory is relied upon for intention which is exemplified by making a plan for a future action. Plans to attend class on time, to take a particular route to class, to get a hallway pass to the office, or to meet a teacher or another student after classes can go awry. Memory loss in this area can make it extremely difficult for the student to navigate the school environment and keep commitments required to participate in educational and social activities. "Prospective memory loss has implications for a person's ability to live independently" (Graf & Uttl in Ward et al., p.473).

Ward, et al. (2004) noted that "TBI affects prospective recall in adolescents. Secondly...prospective memory can fail even after an intention to act has been fulfilled, in that an individual may forget he has acted and the intention remains activated needlessly" (p. 491). The student may repeat the action, not realizing that he or she has already fulfilled the requirements of the task. Children who are by nature more concerned with remembering future events may experience more difficulty with performing the task and then wanting to re-do it because they have no recollection of the first time that they completed the task. "Typically, prospective memory failures involved the children

forgetting to take items to school, pass on messages, do chores and keep appointments at the appropriate times or without reminders." (p. 482).

As students get older and transition out of the school setting into the community, other changes can occur. Ward, et al. (2004), stated that "their own worries may intensify about their ability to be reliable with future events. (Mateer, Sohlberg, & Crinean in Ward, p. 473). Problems with memory can become much more personal. "Their heightened concern about prospective memory loss over retrospective memory loss could occur because when retrospective memory fails, the memory is seen as unreliable, but when prospective memory fails, the person is seen as unreliable" (Winograd in Ward et al., 2004, p.473).

Ward, et al., (2004) also wrote that in addition to problems encountered in academics and in navigating the school setting, other problems may occur, or be exacerbated by memory deficits. These impairments can create social difficulties for the affected children. An example is provided by one patient who "has problems reading subtle non-verbal cues. She interprets quite literally innuendo and sarcastic tones directed towards her... [the true] meanings were lost on her . . . She has difficulty understanding humor that involves the manipulation of language" (p. 483).

Other factors may be compromised that indirectly affect memory performance. Some examples of such factors would be visuospatial function and processing speed. "The speed of information processing contributes to memory functioning (encoding), verbal comprehension and the capacity to cope with new situations. . . processing speed is a basic mechanism that must be preserved for the correct functioning of other cognitive processes" (Rios, Perianez, and Munos-Cespedes, 2004, p. 258).

"Visuospatial deficits [existed] at the time of hospital discharge in children who had sustained moderate to severe TBI. In particular, attention to visual detail (picture completion), visual sequencing (picture arrangement) and visual-spatial organization (block design) were shown to be impaired "(Lehnung 2003 et al., p. 855). Again, damage to certain areas of the brain correlates with specific manifestations of disability. A damaged corpus callosum is frequently involved with visual-spatial disorders.

According to Lehnung et al. (2003), "spatial behavior consists of diverse spatial skills developing at different time points during childhood" (p. 857). Spatial awareness is what allows us to find our way in our environment, and plan routes to our destinations. It also allows participation in math, and other learning at higher levels. Different aspects of spatial behavior include orientation by a variety of means, such as navigation by landmarks and more sophisticated cognitive mapping skills for future plans. Independence can only be achieved if our ability to navigate our environment and plan routes is intact.

A critical factor in memory and spatial performance is the age at which the brain injury occurred. "Children with TBI who had substantially recovered neurologically had difficulty acquiring or using a cognitive map of the environment" (Lehnung, et al. 2003, p. 865). "Studies have demonstrated that if head injury affects the acquisition of skills not yet acquired, these skills are more impaired than skills developing earlier in life. " (Barnes and Catroppa in Lehnung et al. 2003, p.857). Since visual spatial skills develop along a continuum as childhood progresses, children who receive their head injury early in life are likely to be unable to develop sophisticated cognitive mapping abilities.

Sensory Dysfunction

"Almost all events in the outside world stimulate several senses simultaneously. Consequently, any appropriate behavioral response to these events relies upon the ability to discriminate the context-relevant from the context-irrelevant information in each sensory channel and to integrate the relevant one in a coherent, comprehensive context" (Sarno, Lutz-Peter, Lipp, & Schlagel, 2003, p. 413). "Sensory processing relates to the performance skill of adaptation – responding appropriately to nonverbal environmental cues" (AOTA, 2004, p. 622).

In contrast, people who have incurred a brain injury can have deficits in their ability to perceive, interpret, and act upon sensory information. Rios, et al. (2004) noted a typical manifestation is taking much longer than normal to process information and form a plan of action. "Mental slowness implies that the amount of information processed per unit of time is reduced. The slowness of information processing is one of the most consistent findings in TBI patients and has been repeatedly demonstrated in this population" (p. 258). Sometimes they demonstrate reduced processing speed in all areas of sensory intake. At other times, only certain sensory systems are affected. Sarno, et al. wrote that "relative to controls, speed of processing for TBI patients is disproportionately slower when information is presented in the auditory versus the visual modality. . . By manipulating information at a pace customized for an individual through compensatory strategies and environmental modifications, information processing speed and, consequently, performance could be enhanced significantly" (p. 414).

Studies have been conducted to determine what manifestations of sensory deficits occur in people with TBI. There can be problems with both high or low thresholds with

any of the 5 senses, which can be linked to processing speed. According to Dunn (1999), when sensory thresholds are too high, children react less readily to stimuli, take a longer time to respond, and appear lethargic. When thresholds are too low, children react too quickly and frequently to stimuli, and appear to be overly excitable or hyperactive. Rios, et al. (2004) conducted a study to determine effects of processing speed on attentional tasks. Results from the study suggest that slowness of processing and the degree of controlled processing or supervisory strategies required to perform a task are important factors (p. 264). Sarno, et al. (2003), completed a study to determine reaction times, which can be involved with high thresholds and delayed processing. In this study, it was determined that "TBI patients have prolonged reaction times and larger response variability" (p. 414).

Individuals can overreact to certain stimuli which remind them of their injury or of traumatic events surrounding their injury with such a degree of fear and dysfunction that they cannot participate in everyday activities for long periods of time. This condition is called Post Traumatic Stress Disorder. "Post-traumatic stress disorder (PTSD) is characterized by the development of three clusters of symptoms following exposure to an extreme traumatic stress: persistent re-experiencing of the event, avoidance of stimuli associated with the trauma, and increased arousal. The symptoms are present for longer than one month and are of sufficient severity to cause clinically significant distress and/or disruption to psychosocial functioning" (Mather, Tate, & Hannan, 2003, p. 1078).

Whether or not PTSD follows TBI in children has been an area of debate for some time. The conflict has been in determining whether the PTSD-like behavior is a result of a reaction to the memory of the event, or if it is a result of the damage to the brain tissue

itself. However, after careful diagnosis and observation, Mather, et al. (2003) concluded that, "The results of the present study. . . provide firm evidence, in a child population, to refute then claim that PTSD and mild TBI are mutually incompatible disorders following traffic accidents" (p. 1086).

In summary, irrelevant or incorrectly perceived sensory information diverts attention, contributes to confusion, and increases the processing time required to sort out, understand, and act on the incoming information. This can contribute to behavioral manifestations, which can affect student scholastic performance.

Behavior Dysfunction

A traumatic brain injury can affect behavior in a wide variety of ways. Some of the most commonly seen behavior anomalies are problems with attention, abnormal reactions to sensory information, coping problems, social problems, aggressiveness, and irrational fears. All of these problems can make school participation extremely difficult. Pogi, et al. (2003) conducted a study to determine which behavioral disorders were the most frequently experienced by children and adolescents after TBI. The researchers used the Child Behavior Checklist to gather the data. The checklist is an instrument that is used to assess negative behaviors and emotional difficulties of children and adolescents. The results indicated that children ages 0-6 years had the most difficulty with internalizing (33.3%), being withdrawn (25%), and having social problems (16.7%). Those ages 7-13 years demonstrated the most difficulty with internalizing (65%), withdrawn (30%), attention and hyperactivity disorders (30%), and aggressiveness (30%). The last group, ages 14-18 years, demonstrated most difficulty with internalizing behaviors at 48%, externalizing (28.8%), social problems (23.1%), attention and

hyperactivity disorders (17.3%), aggressiveness (13.5%), anxiety and depression (13.5) (p. 839).

Based on their study Pogi, et al. (2003) noted "older children show a greater number of behavioral problems" (p. 842). Older children are expected to demonstrate a more sophisticated and mature set of performance skills in school and in the community. These societal demands may increase behaviors that manifest due to fear, frustration, and lack of performance skills that result in the inability of the adolescent to meet these demands.

Attention is an area that can affect behaviors across all contexts. As detailed in the previous sensory section, a child may display varied responses to stimuli, resulting in either overreaction or underreaction and a failure to respond as others expect them to do. "Disorders of attention are a major problem after traumatic brain injury that produce deficits in other cognitive functions and in everyday activities. . . .The failure in attentional processes may be due to a primary attentional control deficit or might be secondary to the impaired processing speed" (Rios et al., 2004, p. 257-258).

It should be noted that nearly all of these behavior problems contribute to difficulties in the social context. The adolescent with TBI demonstrates behaviors that others may view as unusual or, depending on the ages of the children involved, frightening, and therefore they hesitate to participate in social activities or interactions with the brain-injured individual.

Social Aspects Affected by TBI

In adolescent society, nothing is as important as the relationships that are formed with friends. For typically developing children, these relationships frequently become

the foundation of adult social structure and support. In this stage of life, young adults learn to interact with others in professional as well as personal ways. They learn to interact with the opposite sex and form couples, and they learn to view older adults in a different, less authoritarian and oppressive way. For the brain-injured adolescent, all these relationships can be much more difficult to form, sustain in active participation, and terminate when necessary.

Bedell and Dumas (2004) conducted a study to "describe the nature and extent of participation in home, school, and community life and environmental and child-related problems for children and youth with ABI [acquired brain injury]" (p. 69). Data was collected from caregivers by survey, and by using the Child and Adolescent Scale of Participation (CASP), the Child and Adolescent Scale of Environment (CASE), and the Child and Adolescent Factors Inventory (CAFI). Activities examined included social, leisure, family chores and decisions, academic activities, and shopping and managing money. A summary of results from the CASP indicated that children were most restricted from participating in structured events in the community such as team sports and holiday events. They also had difficulty managing their daily schedule and participating in social activities with peers at school. Based on the CAFI results, attention and memory were found to be the most significant child-related problems, followed closely by problem-solving and judgment. Results from the CASE indicated that the most severe environmental difficulties encountered were inadequate information, interventions, services and programs at school for children with TBI. Lack of support from school and poor attitude/lack of understanding in the community were also frequently described.

Social participation is a major area of human occupation. According to Passmore (2004) when this participation is restricted, psychological and other problems may result. The "perceived self-efficacy" of the individual may be lowered. "Self-efficacy comprises the "individuals' perceptions about their ability to execute outcomes, such as coping behavior...thus, self efficacy is an important determinant in understanding one of the major influences affecting an individual's capacity to perform, which is a critical domain of occupational therapy" (p. 64).

Strategies to Assist the Student with Brain Injury Dysfunction

A student's ability to remember both long and short term coded information is vital to school success. When a student returns to school after recovering from a TBI, the first step for the school is to collect information regarding the student's present level of performance from parents. According to Ward, et al., (2004), parents often provide invaluable detailed information to school staff regarding what does and does not work to assist their child to remember successfully.

Memory Strategies

Ward, et al. (2004) noted that many different strategies are tried by most parents over time. One frequently successful strategy that is frequently used relies on behavioral conditioning using of rewards and punishments. The authors clarified that non-memory factors (e.g. planning, organizing and motivation) overlap with the children's ability to remember. In some circumstances where children were "rewarded" for remembering by achieving some positive payoff, their motivation to remember appeared to be able to overcome cognitive limitations, even in the case of children with the most severe traumatic brain injuries.

However, it must be noted that not every child with prospective memory loss can be motivated to overcome these deficits. The area of the brain affected may make a difference in the child's ability to respond to motivators. Ward et al. (2004) cited Ylvisaker and wrote, "strategies that rely on consequences may not work in children with damage to the ventromedial region of the prefrontal cortex because the neural links between memory and emotions may be impaired" (p. 490).

According to Ward, et al. (2004) some strategies involve repetition and the learning of set procedures and patterns; these strategies make use of implicit memory. This method can also increase processing speed (Rios, et al., 2004, p. 268). However, training a child by virtue of repetition can become problematic under certain circumstances. Sometimes the routine might need to be altered, for instance, if the child's school schedule changes, or if the family moves to a new neighborhood. "If [the procedures] become over-learned, it may be difficult to un-train the children if the procedures need to change in the future" (Ward, et al., 2004, p. 490).

Ward, et al. (2004) wrote the most effective means of assisting the child to overcome his or her deficits changes with each case. External memory aids are often recommended; these can include such things as audio alarms, schedules, or token objects. "These appeared only to be successful in children with high self-awareness" (p. 490). Although these are strategies that are common and can be highly successful, variations on these themes or completely different strategies, such as manipulation of the amount of information or the amount of time, voice recorded planners or picture schedules are used to better meet student needs.

Based on her readings and experiences, Kathy Morton, brain injury consultant for the Natrona County School District, has developed a set of handouts that contain strategies that can be used by parents of students who have had a TBI. These handouts are not published and have been shared with this author for use in this document. She recommends teaching the student with a brain injury to associate, categorize, rehearse, and chunk information into meaningful amounts and to provide the student with a variety of visual and auditory examples of a topic. She suggests the use a memory book for keeping track of appointments, assignments, and responsibilities. She suggests encouraging the use of mental imagery of objects, events, and physical layouts and teaching the students to link events being remembered with those occurring at a similar point in time. The strategies sections which follow include additional suggestions from Morton. She recommends teaching the student with a brain injury to associate, categorize, rehearse, and chunk information into meaningful amounts and to provide the student with a variety of visual and auditory examples of a topic. She suggests the use a memory book for keeping track of appointments, assignments, and responsibilities. She suggests encouraging the use of mental imagery of objects, events, and physical layouts and teaching the students to link events being remembered with those occurring at a similar point in time

Sensory Strategies

Occupational therapy interventions for sensory processing problems focus on strategies to assist the person to learn to understand and modulate their sensory responses. Problems with any of the five senses can occur and may need to be treated. These can manifest as both high (sensory defensiveness) and low (lack of awareness) sensory

thresholds. Kathy Morton (n.d.) notes the following sensory problems that can affect school performance: visual problems including blurred, double, visual field neglect, changes in depth perception, poor scanning and tracking; hearing loss; changes in sense of taste; changes in sense of smell; and/or visual/perceptual deficits. She recommends manipulating the noise and activity level of each setting whenever possible. Special materials may need to be provided such as large print or headphones to reduce sensory stress.

Specific interventions for each of the senses are outlined by Miles, Cook, Miller, Rinner and Robbins (2000). For taste, they suggest trying foods in different forms and textures, i.e., dehydrated, baked, etc. For students with olfactory sensitivity, they recommend reducing fragrances in the environment, using fragrance-free washing products, and advising support personnel not to wear perfumes (p. 80). For sound sensitivity, suggestions include controlling the environment, gradual exposure to adversely interpreted sounds, and pairing a noise with a preferred activity (p.89). For tactile issues, recommendations include gradual introduction of items, and provision of fidgets (small, tactilely interesting toys) with different textures (p. 96-97).

Games are another way to introduce new sensory experiences. Lieberman and Cowart (1996), recommend ball games for adolescents, using different textures on the balls and placing items in beachballs such as rice to increase auditory and proprioceptive interest(p. 83). They suggest dance as a way to increase tolerance for movement and auditory sensitivity. Props and costumes can be used to increase tactile and visual interest (p. 93).

Strategies for Behavior and Attention

Morton (n.d.) writes that several years after their injury, 50% of severe TBI survivors exhibit behavior problems that emerged after their injury. Up to 33% of students with mild brain injuries have new behavior problems. These behaviors can result from a variety of intrinsic and extrinsic factors influencing the student. Internalizing refers to the tendency to refrain from verbalizing or sharing problems in order to seek assistance. Strategies to assist with this problem can include arranging for a teacher or peer mentor that will make contact to help the brain-injured person at regular intervals. Once the underlying cause of the internalizing is identified, then other strategies can be employed to assist with those details. Externalizing can refer to either attempts to inappropriately engage others in conversations about problems, or in acting out behaviors demonstrated to draw attention from others. Strategies should be created considering the age of the affected student, and the peculiarities unique to that student in order to achieve success (Pogi et al., 2003).

Morton (n.d.) suggests teaching appropriate behavior by word and by example. Attend to good behavior quickly, and avoid punishment due to memory and judgment deficits. Videotaping behaviors and viewing with the student may be helpful.

For attention and concentration concerns, Morton (n.d.) suggests: removing visual and auditory distractions, placeing the student away from the door and near the teacher, cueing the student to begin and stay on tasks, controlling the length of the task by using a timer, teaching the student self-regulating techniques, and by rewarding on-task behavior.

Social Strategies

In the course of developing this review of literature, sources for concise social strategies for use by occupational therapy were not found. Therefore, the general strategies in the following paragraph are offered from interventions that this author has used in practice, and found to be successful for many students.

It should be noted that the previously discussed behavior problems typically contribute to difficulties in the social context. The adolescent with TBI demonstrates behaviors that others view as unusual or frightening, and therefore they hesitate to participate in social activities or interactions with the brain-injured individual. Strategies can be employed that include the person with TBI in certain activities. These inclusions should have a focus on what the child can contribute and is able to do well. This will reinforce confidence both in the bran-injured individual, and in his or her peers.

The only way to increase social skills in the social context is to participate, and therefore, practice. Social skills training in groups using methods such as role play and modeling can prove useful. "Groups require adolescents to work cooperatively with their peers to accomplish physical and emotional challenges . . . these programs foster participant's abilities to engage in cooperative activity and dialog" (Porr & Rainville, 1999, p. 486). Interventions focus on finding ways for brain-injured adolescents to be more fully included in all educational activities. Sensory issues, fatigue, behavior strategies, and time management are some of the intervention pathways that can be addressed to increase the quality of social participation.

Family Issues

Very few things in life can compare to the emotional, physical, and financial blow that a family receives when they learn that their child has suffered a traumatic brain injury. Every system that the family formerly depended on can be damaged. Relationships are strained, and the family faces an additional set of problems related to accepting a very steep learning curve of new and frightening information and procedures.

Parents will have to learn many coping strategies to deal with their new situation. Many types of strategies will need to be tried and adapted to fit each individual family situation. A study of parental coping skills developed by Benn and McColl (2004) looked at three types of coping skills that parents of brain-injured children typically adopt that are successful. These are problem solving, emotion-oriented, and perception-oriented coping strategies. Problem-solving strategies include things like outlining the difficulty and brainstorming solutions. Emotional-oriented strategies involve things like sharing feelings with friends, or hiding problems from public view. Perception-oriented strategies include altering ones thinking about the difficulty or the opinion of the new lifestyle in general. As part of their findings, Benn and McColl (2004) listed the strategies most frequently used by parents. The problem solving strategies included: knowing what had to be done, so redoubled efforts to make things work out; trying to change someone's mind; and standing their ground. The perception strategies included: discovering what is important in life; looking for the silver lining; reminding self that things could be worse; finding out more about the problem; and changing or growth as a person. Finally, the emotional strategies included: keeping others from knowing what is going on, and letting one's feelings out somehow (p. 245).

The goal of adopting coping strategies for use in the home is to normalize family routines as much as possible. Daily life for the parents and other family members must continue. Wade, quoted in Wade et al. (2003), stated that "There is some evidence that injury-related burden, caregiver distress, and family dysfunction peaks shortly after the injury" (p. 172). After the family has had some time, and some sense of routine has returned at least in part, "families may adapt to longer term difficulties and return to earlier modes of interaction" (Wade, p. 172).

The next hurdle will come for parents when it is time to think about placing their child back in school. Family members often must deal with a lack of information regarding prospects for return to school or other educational information with regard to their brain-injured student. According to Bedell and Dumas (2004), several problems can present upon return to school. Inadequate information about brain injury, inadequate services and programs at school, lack of support at school, and people's attitudes are mentioned as problems frequently encountered by returning students and their families (p. 74). Parents may find themselves in the role of educator to assist school staff in creating the best possible return experience for their child.

Bedell, Cohn, and Dumas (2005) conducted a study to determine what strategies parents used to promote their child's social participation as they returned to school and community involvement; the study used a parent interview to collect strategies used. The authors then created analytic memos to identify and label the strategies, supports, and barriers described by the parents. These memos were then sorted and classified according to their major purpose, and recurrent patterns were further identified.

Three categories of strategies used by parents to promote social participation were identified. These categories were: 1) creating opportunities, which included generating ideas, modifying the environment if necessary, and finding peers to accompany the child; 2) teaching skills, accomplished by role playing situations and discussing problem solving techniques; and 3) regulating cognitive and behavioral function, exemplified by such techniques as establishing routines and setting limits (pp. 278-279). "Parents described that supporting their children's participation was a process that evolved over time, primarily through trial and error" (p. 281).

The Role of Occupational Therapy

The first experience a young person who has suffered a TBI may have with an occupational therapist will most likely take place in the acute hospital setting. The individual will be assessed as soon as possible upon admission with an instrument such as the *Glasgow Coma Scale*. Occupational therapists as well as many other practitioners glean useful information from this initial assessment. This instrument "is used to measure levels of consciousness following a traumatic injury to the brain" (Gutman & Schonfeld, 2003, p. 4). Information from this assessment will provide information regarding the initial extent of the injury. It will indicate signs of the first recovering phases, such as eyes opening, generating a motor response to a simple command (squeeze my hand), and generating a verbal response. Another useful instrument used by many practitioners, including occupational therapists, during the initial recovery phase is the *Rancho Levels of Cognitive Functioning*. This instrument "describes general cognitive and behavioral status" (Gutman and Schonfeld, p. 4) and gives an indication of the level of assistance the

patient requires at each stage of initial recovery. Such assessments can be repeated to show change, and to predict future outcomes including discharge from the acute setting.

After the young person has moved to a rehabilitation setting and continuing into the return to school, additional formal assessments may be used by occupational therapists to determine basic abilities. In general, occupational therapists assess a student to determine their level of function across a variety of contexts that are encountered in the school setting. These can include physical contexts such as classrooms, hallways, activity rooms, cafeterias, outside areas, and surrounding neighborhoods. Time is a vitally important context in the school environment, and many demands occur each day that require the student to be aware of and obedient to time constraints. Social contexts are paramount to teenagers in general (AOTA, 2002).

Multiple areas of independent functioning can be challenged by a TBI. The occupational therapist will perform a comprehensive assessment to identify an individual student's strengths and needs, and then provide intervention input as a member of the student's IEP team (Sames, 2005). According to AOTA (2002),

> The process of occupational therapy service delivery begins by evaluating the client's occupational needs, problems, and concerns. Understanding the client as an occupational human being for whom access and participation in meaningful and productive activities is central to health and well-being is a perspective that is unique to occupational therapy. Problems and concerns that are addressed in evaluation and intervention are also framed uniquely from an occupational perspective, are based on occupational therapy theories, and are defined as problems or risks in occupational performance. During intervention, the focus remains on occupation, and efforts are directed toward fostering improved engagement in occupations (p.613).

For the student education and the ability to function in the school setting both educationally and socially are a primary component of that student's participation in an area of occupation.

The occupational therapist will identify the client factors, body functions and structures impacted by the TBI that may limit the student's ability to participate fully in the school setting (AOTA, 2002, p. 613). Once assessment is completed, then the OT will prioritize the challenges that the student faces and as part of the school intervention team prepare goals with objectives to address the most important deficits. Daily intervention strategies will be created to support the objectives underlying the goals and bring about an increase in performance efficacy for the student (Sames, 2005).

Adult Learning

The information in this project has been prepared for use as an educational tool for teachers and assistants in the school setting. Its purpose is to help staff to more completely understand TBI, and to offer practical strategies to assist students in fulfilling their performance patterns in the school context. Because this product is being prepared for use by adult learners, it is important to understand some of the basic principles of how adults learn, and how to craft and present information to make the most of the learner's time and experience.

One of the first things to consider is learning style. The material presented must speak to a variety of different styles, while at the same time remaining generic enough to not favor any one approach. Sarasin (1998) described three style preferences exhibited in the adult learner community: auditory, visual, and tactile-kinesthetic. Auditory learners need information presented orally as individual facts. Visual learners require visual cues such as charts, diagrams, or outlines to assist them. Tactile/kinesthetic learners learn by doing; they require a physical interaction with the learning process. These three learning styles are combined with tendencies to be a dependent or an independent learner.

Independent learners have an analytical approach and tend to prefer a more formal learning situation. Dependent learners have a more comprehensive approach and have a need to keep their hands and bodies busy during the learning process. Sarasin also noted that post-secondary students will learn better if they are involved actively in the learning process.

When preparing materials for adult learners, it is important to present the information in such a way that it is informative, interactive, relevant, and concise. Most adult learners are in situations where they are required to make optimum use of their time. The materials need to be easy to understand and apply. Activities with manipulatives need to have good directions, and should be easily adaptable to a number of situations. This promotes ease of generalization from one environment to another, and will help the teacher or para use the strategies with a variety of students, thus maximizing application of the knowledge acquired from the adult learning experience.

Conclusion

After a search of the current literature, and soliciting information from a variety of administrators and teachers working with the adolescent population, it was concluded that there is no readily available published training material that is geared toward educating paraprofessionals regarding how to manage and assist adolescents with traumatic brain injury in the school setting. The purpose of this project is to develop training materials for this group of individuals and the materials are included in their entirety in Chapter IV of this document.

CHAPTER III

METHOD

On February 15, 2006, an interview was conducted with Jan Schulz, Training Director and Special Education Services Coordinator for Natrona County School District #1 in Casper, Wyoming. Ms. Schulz has been responsible for the training needs of all staff in the Special Education Department for seven years. The purpose of the interview was to determine if, in her opinion, a training product to promote understanding of and school success for children with traumatic brain injury (TBI) geared to educate paraprofessionals (and secondarily toward teachers and other school staff) would be useful information. Ms. Schulz stated that it would useful and to the best of her knowledge no such training product existed. Based on her input plus a literature search and review, this author concluded that there is a need for such a product in the educational setting.

The information to be presented to the audience was chosen for its practical relevance to both the school staff member and to the student. The first training module was developed to give the inservice participants a general overview of TBI and the impact it can have on a student. Information for this unit was collected from current research and literature. Other information included in the training modules addresses the most commonly found difficulties that are experienced by adolescent students who have a diagnosis of TBI; this information was based on this author's experiences and the review of current research and literature in Chapter II. The difficulties that were identified

included: memory, sensory integration, behavior, and social issues; all of these aspects intertwine, affect, and reinforce each other. Terms associated with brain injury and with occupational therapy are outlined to clarify understanding. A description of occupational therapy assessment is also presented. Occupational therapy assessments are different from the academic assessments. This information is included so that staff can learn about how factors that support educational efforts such as sensory integration, visual perception, and functional skills can be assessed, and how intervention for these factors can improve scholastic performance.

A section on parent and family concerns was included for two reasons. First, family members can provide invaluable and unique information about the student, so their assistance should be sought, and secondly, the family situation can directly affect the student's state of mind and physical condition. It is often best for the student if the family situation is understood by the school staff, so that open and relevant communication between home and school can occur.

Based on the literature and input from school district staff, suggestions for strategies to assist the student with a TBI are presented as part of the in-service modules. The strategies presented were chosen because they are easy to try and require only ordinary circumstances and equipment. A variety of approaches is suggested, and the uniqueness of each student situation is emphasized.

Principles of adult learning found in the literature were considered when developing the training modules. The modules were designed to fit into a standard class time period of approximately 40-45 minutes. A slide presentation begins each session, and audience interaction will be solicited during this presentations phase. Following will

be a hands-on activity to reinforce the information and provide a first opportunity to practice it. The modules were designed in this fashion to appeal to auditory, visual, and tactile learners alike; and to make the most efficient use of the adult learner's time. Chapter IV contains the training materials in their entirety.

Chapter IV

TRAINING MODULES

The product presented here consists of seven training modules. These modules are designed to instruct school system paraprofessionals (and other interested school personnel) in understanding how to assist students who have suffered a traumatic brain injury. The most frequent problem areas, which include memory, sensory, behavior, social, and issues related to the family, are explored in the modules. Descriptions of how each of these problems manifest are described. Strategies are provided to give the teachers and paras tools to use to assist their students to recognize, cope with, and adapt to their problem areas in order to increase the students' scholastic success.

The first module in the series presents an overview of brain injury and provides definitions and descriptions that will be helpful as the series progresses. The second module explores problems associated with memory loss or disruption caused by TBI. Sensory integration problems are discussed in the third module, followed by issues surrounding maladaptive behaviors in the fourth presentation. The fifth module deals with social concerns, and the sixth with family problems. Finally in the seventh module, a brief overview of occupational therapy assessment as it relates to TBI is discussed. Activities are provided with each module that have been designed with consideration for the needs and interests of the adult learner. These activities reinforce the knowledge provided, and offer a first experience in working with the strategies and other information presented in the modules.

The theory of Occupational Adaptation, with its focus on the person recognizing a need for change (increasing adaptive capacity) was used as a foundation for the modules (Schkade, J., & Schultz, S., 2003). It was recognized that the information presented in the modules could affect the adaptive capacity of as many as four different populations: teachers and paras, students, student peers, and the family. Therefore, strategies presented were selected that could be easily adapted and implemented by all these populations. Due to the nature of the material included, it is recommended that this training program be presented by an occupational therapist. The modules are designed to last for 40 to 45 minutes, easily fitting into the length of most single class periods in junior high, middle school, or high school settings.

MODULE I

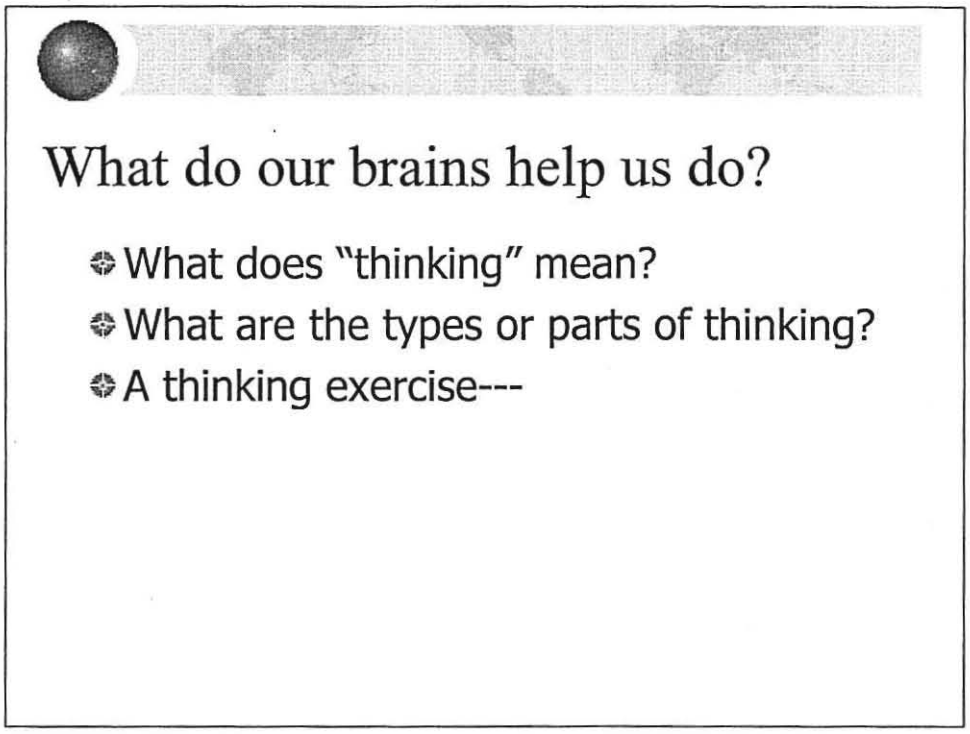
TRAUMATIC BRAIN INJURY OVERVIEW

Brain Injury Overview

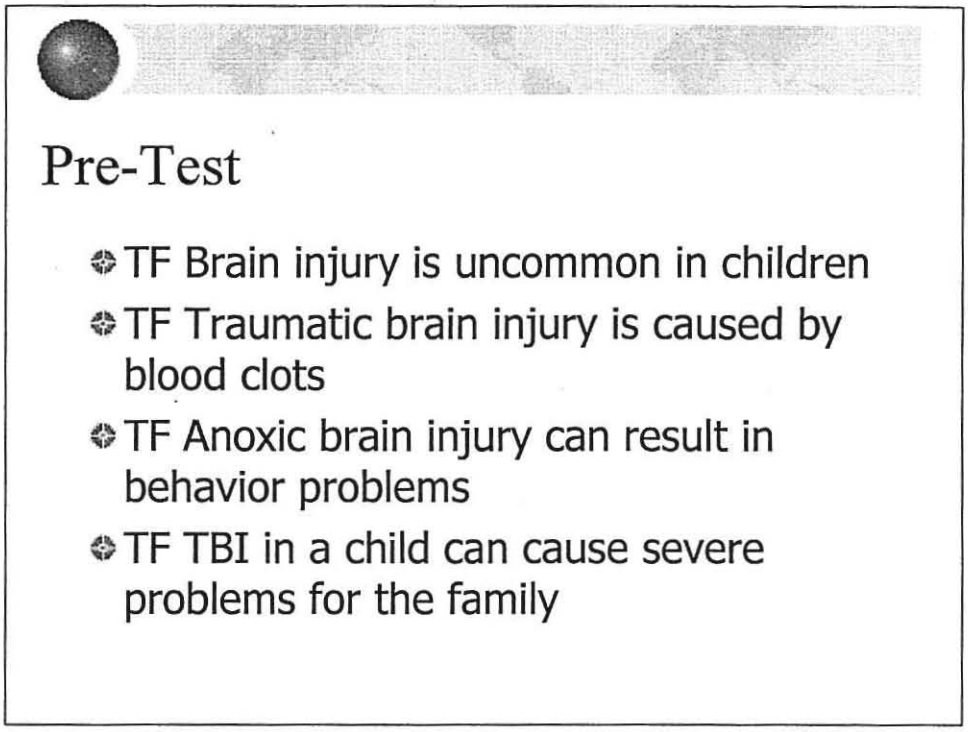
- *"We send the lowest paid staff into the most unstructured and highly stimulating environments of the school day with little or no training, unclear guidelines, large numbers including the most difficult students, and then lend them little professional expertise. We then wonder why we have so much difficulty with students..."*
  -Geoff Colvin

Purpose of this Course

- In this course on TBI in the school setting, you will learn to understand the basic types of, and problems resulting from brain injury
- You will learn about strategies for each of these problems that can be used with students to help improve their function in the school setting
- You will acquire an understanding of terminology, assessment instruments, and procedures used to help identify student needs



Explain that a pre-test and post-test will be part of each module. These exercises will point out and reinforce key concepts to increase understanding of the topic material.



F Slide 7 - a major public health concern

F Slide 6 - TBI can cause blood clots, which can secondarily affect the student

T Slide 11

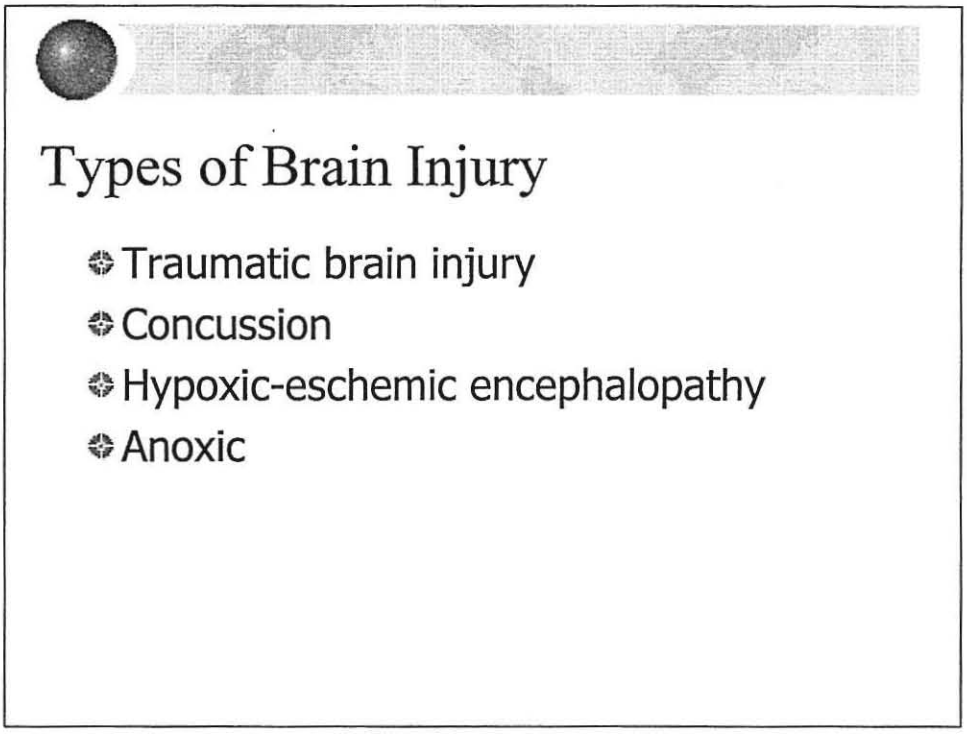
T Slide 13

What is Brain Injury?

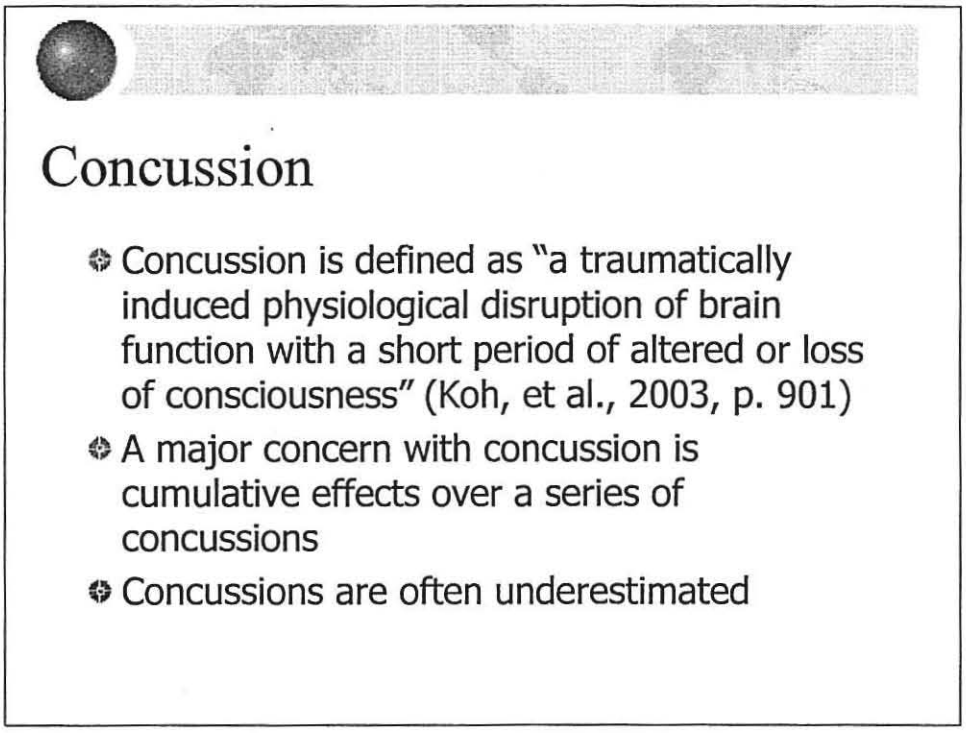
- "An insult to the brain, not of degenerative or congenital nature, caused by an external physical force that may produce a diminished or altered state of consciousness, which results in impairment of cognitive abilities or physical functioning. It can result in disturbance of behavioral or emotional functioning" (Brain Injury Association, n.d.)

Pediatric Brain Injury

- Pediatric traumatic brain injury is a major public health concern. It is a leading cause of death among the young, and results in considerable neurobehavioral morbidity (Ward, et al., 2004).
- In 2002, for the age group 15-24, 103.3 persons per 100,000 individuals suffered a traumatic brain injury. (Centers for Disease Control, 2006)

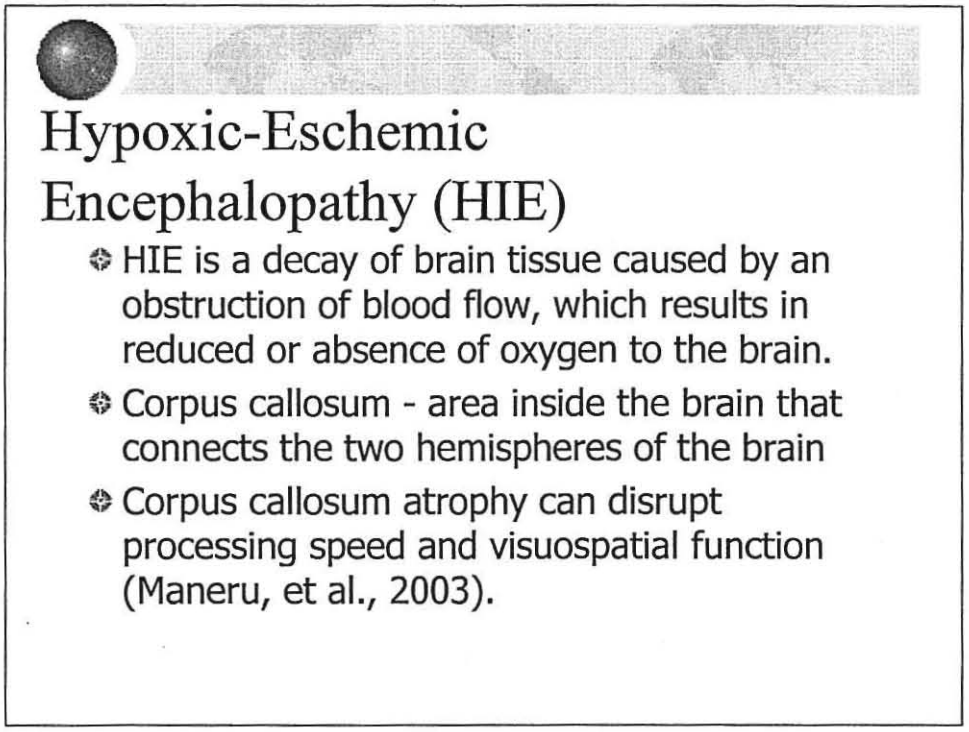


Note that TBI was defined earlier on the slide What is Brain Injury



A typical occurrence is a child who falls at school and hits his head, becoming momentarily unconscious or disoriented.

Concussions, even single events, can have long-term effects. They can also weaken brain structures such as arteries, leading to an increased risk of problems including strokes or aneurysm at a later date.



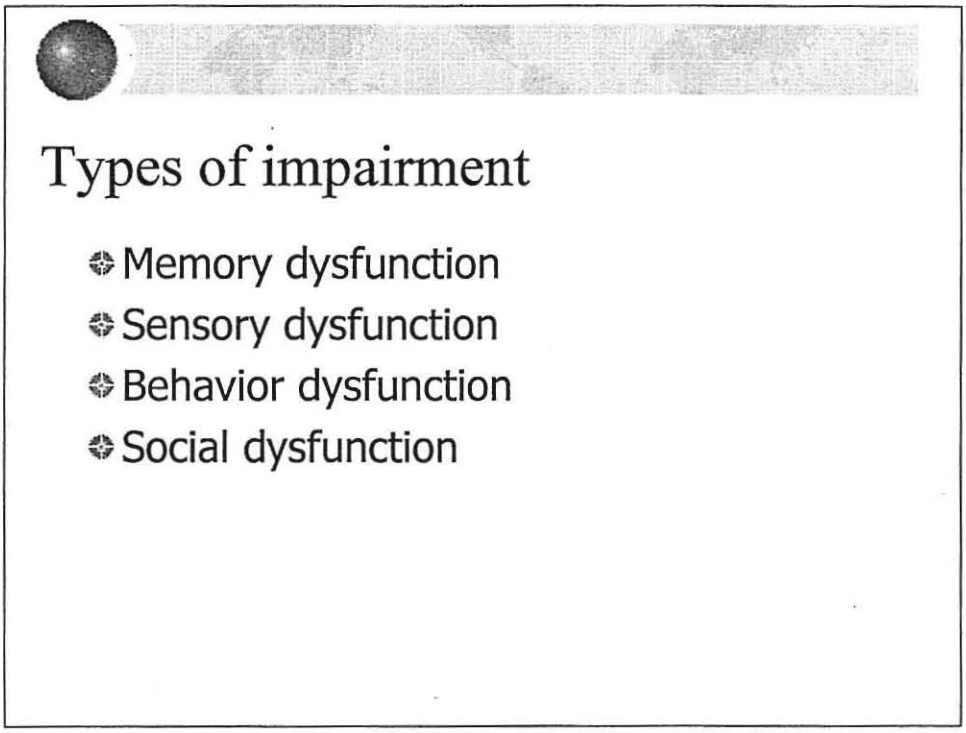
Corpus callosum atrophy is frequently observed in children with HIE

HIE is an obstruction of blood flow and typically causes localized damage. There may be more than one location. Anoxic injury is a physiological process from a generalized lack of oxygen (poor blood flow or hypo-oxygenated blood) that causes diffuse damage throughout many areas of the brain.

Visuospatial function refers to ability to discern things such as figure ground, size and placement of objects

Anoxic Brain Injury

- Caused by reduction of oxygen to the brain
- Causes include cardiac arrest, respiratory failure or hypotension
- Causes diffuse brain damage (Shah, et al., 2004)
- Impairments include memory, personality, and behavior problems (Shah, et al.)

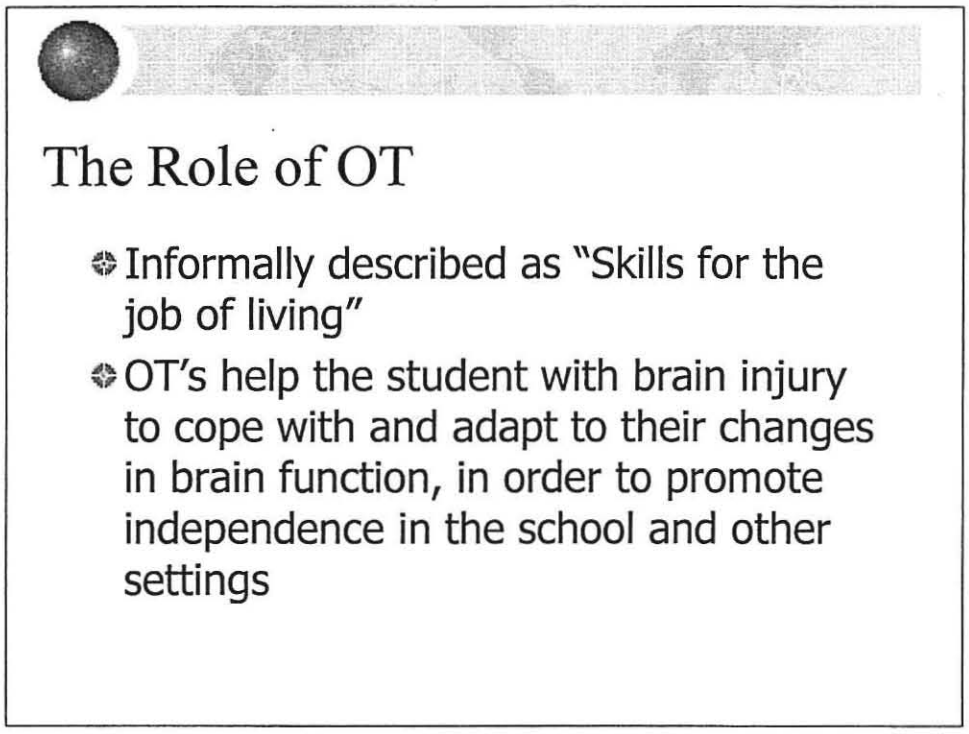


Underlying causes include attention problems and delayed processing speed.

Physical changes in the brain as a result of damage can make it difficult or impossible to encode memory or retrieve previously learned information.

Family Concerns

- Possibility of permanent changes
- Helping other family members
- Financial concerns
- Safety concerns for all
- Return to school concerns

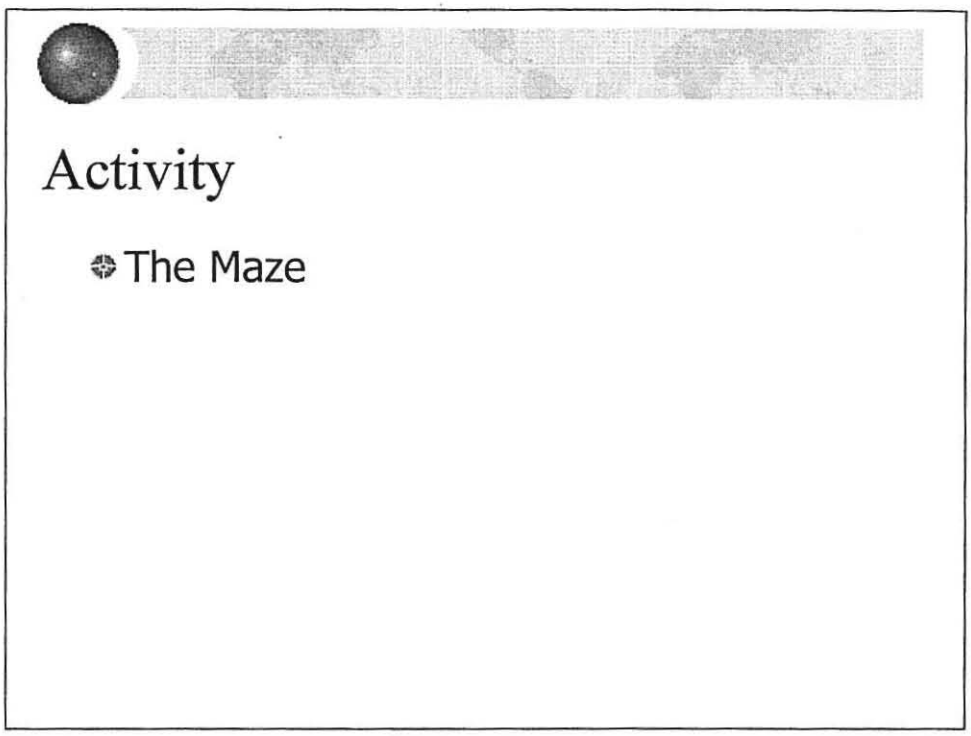


this is accomplished through a series of events including assessment, treatment planning, interventions, and re-evaluation.

QUESTIONS??

Post-Test

- TF Brain injury is uncommon in children
- TF Traumatic brain injury is caused by blood clots
- TF Anoxic brain injury can result in behavior problems
- TF TBI in a child can cause severe problems for the family



How many wrong turns did you make?

equate this exercise to route finding in a school building - what if, from day to day, you could n

How would you deal with the frustration? What solutions can you brainstorm?

Landmarks
Buddy (mentor) system

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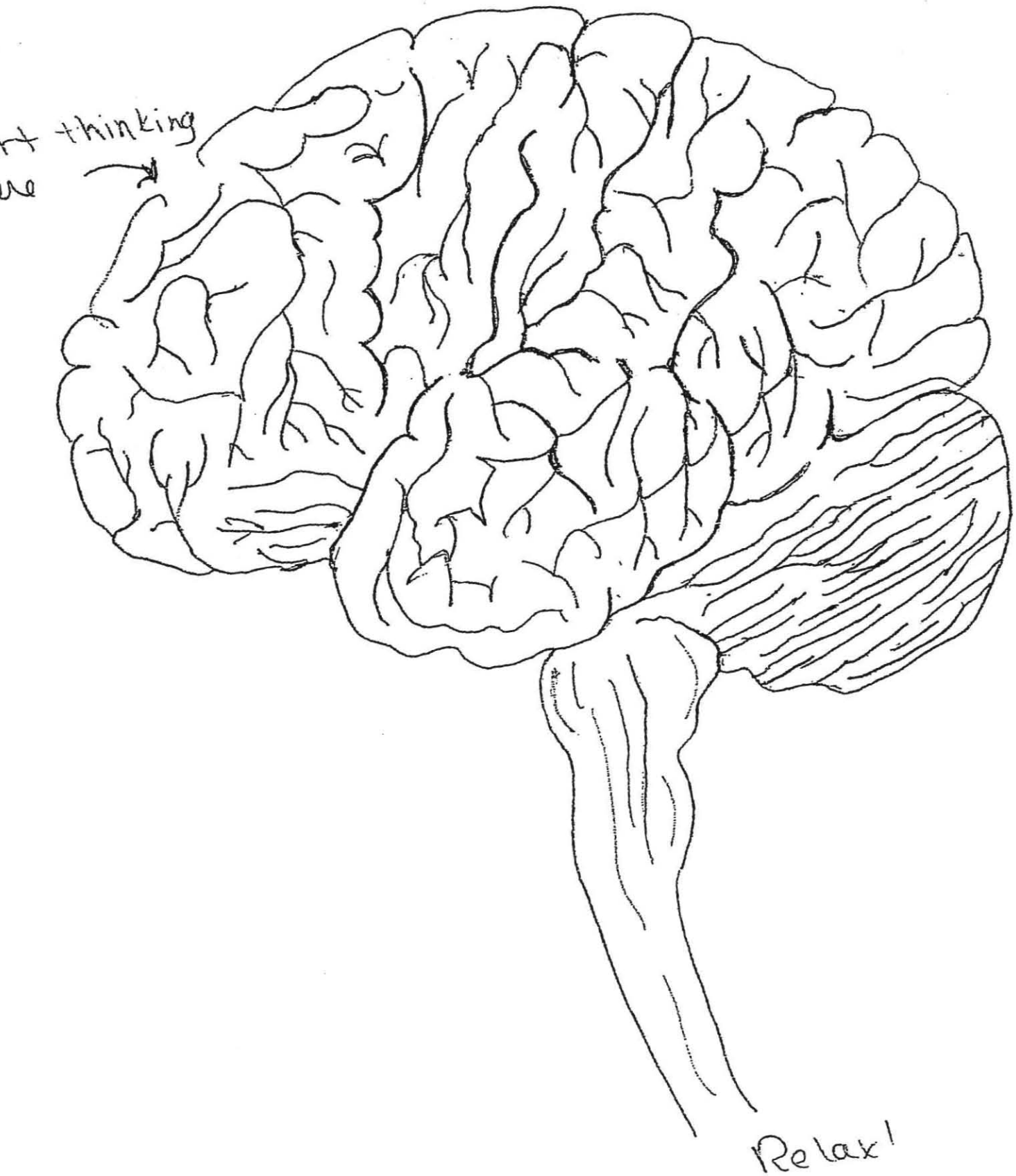

rt thinking
ve
Relax!

PARTICIPANT EVALUATION OF MODULE

Name of Module:_____

Date of Presentation:_____

Location of Presentation:_____

Please rate the statements below according to the following scale:

1=Strongly Disagree; 2-Disagree; 3=Neutral; 4=Agree; 5= Strongly Agree

1. _____ The information presented in this module promoted my learning.

   For instance:

2. _____ The information was presented clearly and concisely.

   For instance:

3. _____ The strategies are logical and can be applied to my situation.

   For instance:

4. _____ The presenter was knowledgeable and respectful of my circumstances.

   For instance:

5. _____ Activities presented were practical and contributed to my learning.

   For instance:

6. _____ All of my questions were answered thoroughly.

   For instance:

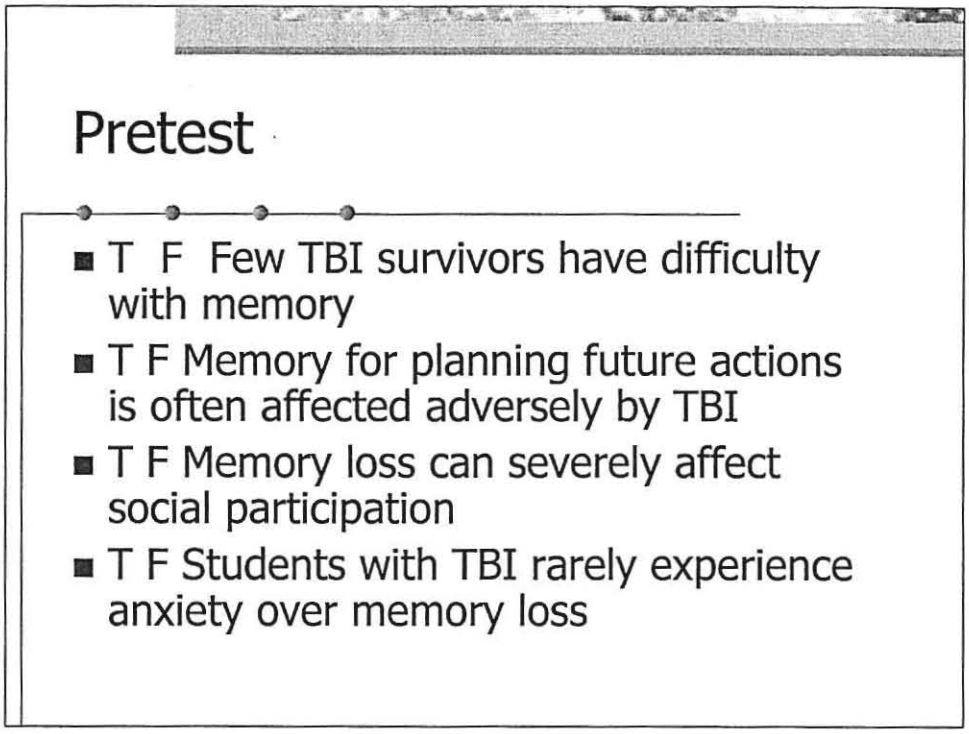
Additional Comments:

MODULE II

MEMORY

Memory

Brain Injury and its Effects on Memory

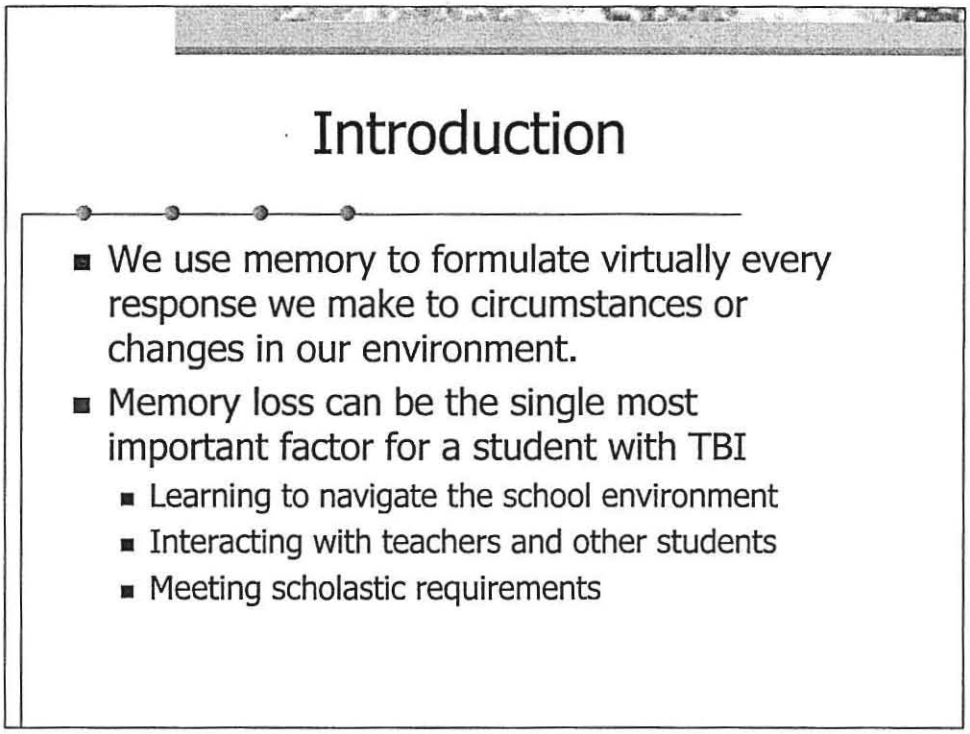


F slide 3

T slides 7-9

T slide 10

F slide 1,4



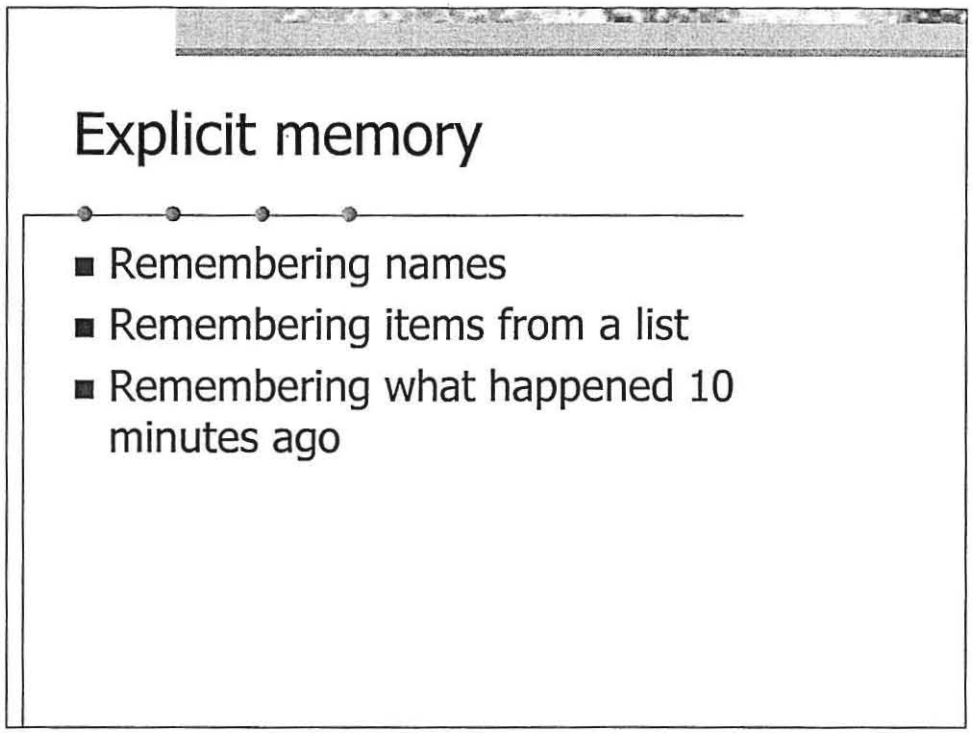
We remember how to interact with objects in our environment and can perform these actions automatically

We remember people and our relationships that we have with them

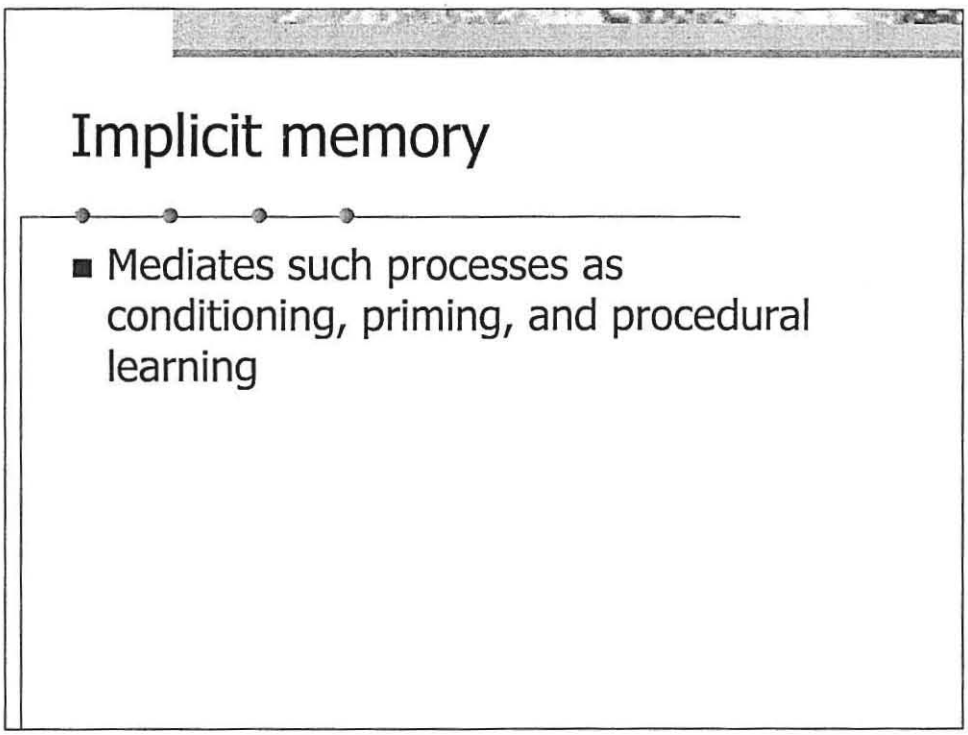
Prior knowledge of how to interact with objects or people is called upon to formulate an action with a new object or person that we might encounter

Types of memory

- Explicit memory
- Implicit memory
- Prospective memory (Ward 2004)



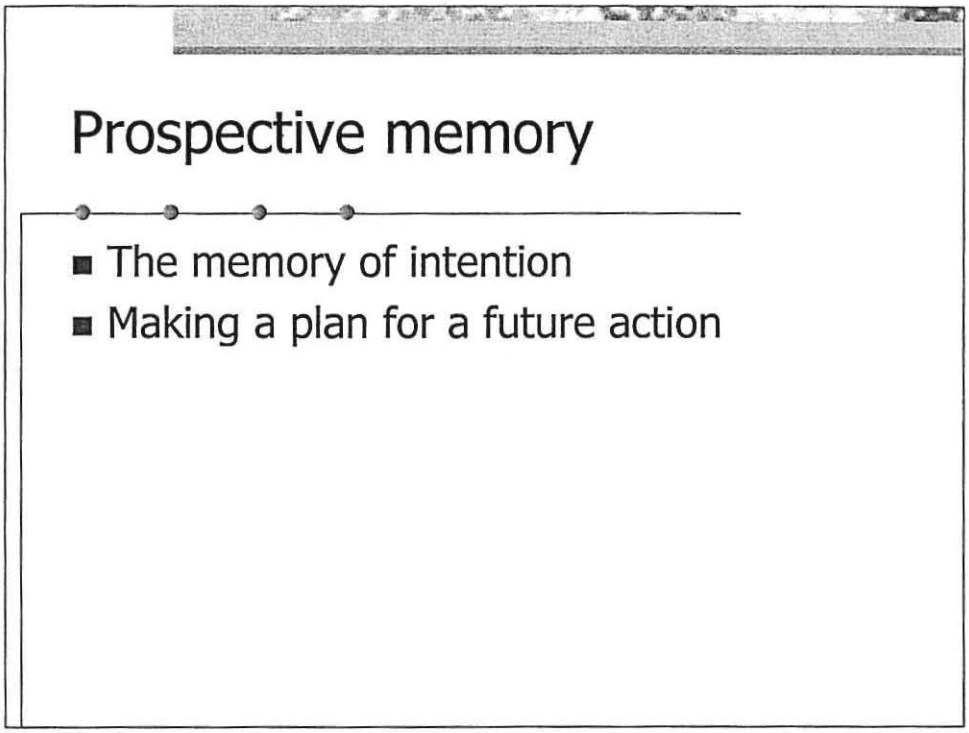
This is short term memory. Many people with brain injury have difficulty encoding new memories in a short term context. There can also be problems when the brain attempts to move information from short term into long-term storage.



This includes things that a person does automatically

Fears

Performing everyday activities such as brushing teeth or riding a bike ("autopilot" types of action)

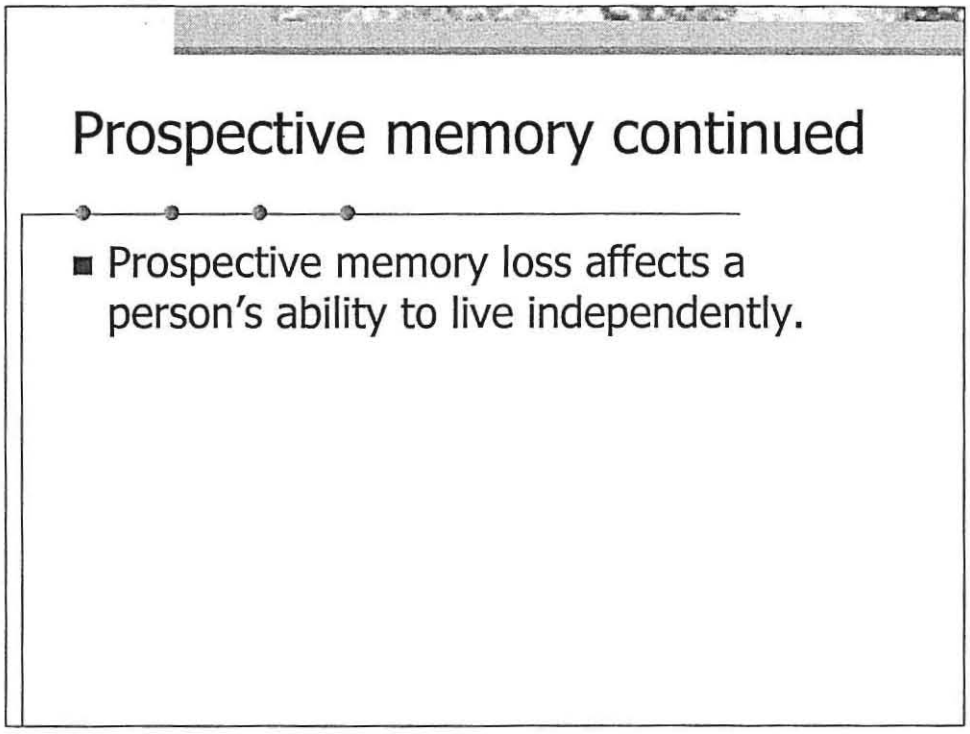


Problems with prospective memory loss affect future plans-

Plans to attend class on time

Plans to take a particular route to a destination

Plans to meet a teacher or another student after school



Performing tasks at predesignated times

Remembering to take homework or items to or from school

Keeping appointments

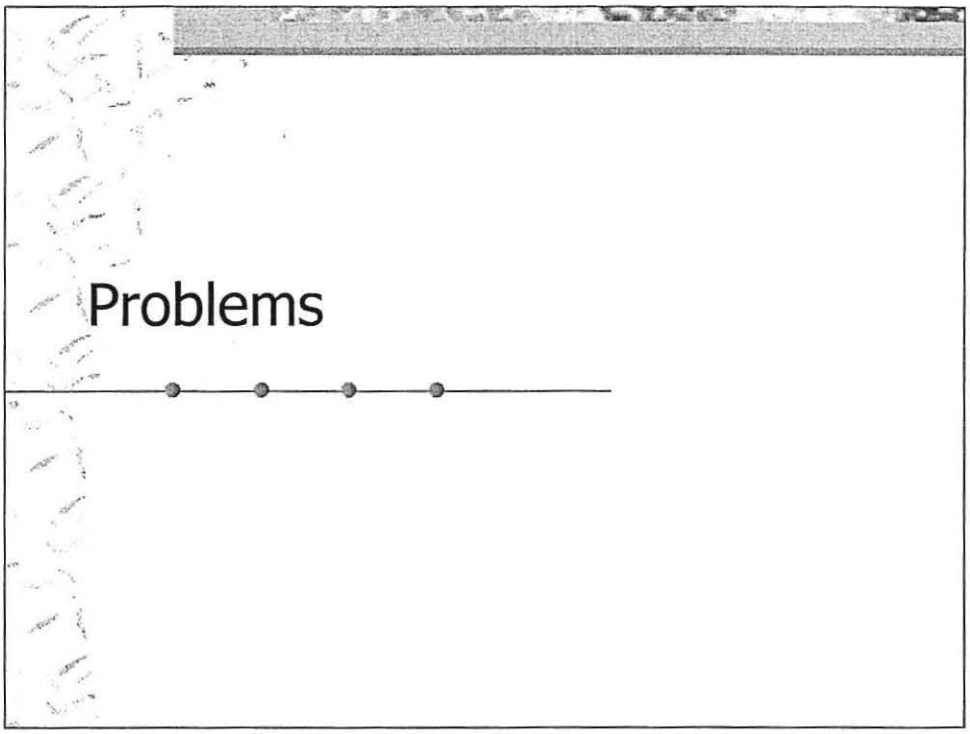
Keeping one's word or promise

Prospective memory continued

- Anxiety can occur in those individuals who are aware of and concerned about their prospective memory loss
- When retrospective (past events) memory fails, the memory is seen as unreliable. When prospective memory fails, the person is seen as unreliable (Ward 2004)

This anxiety can manifest itself in worries that obligations will not be met

the student may repeat actions, statements, or requests, because he or she may not remember initially completing the task

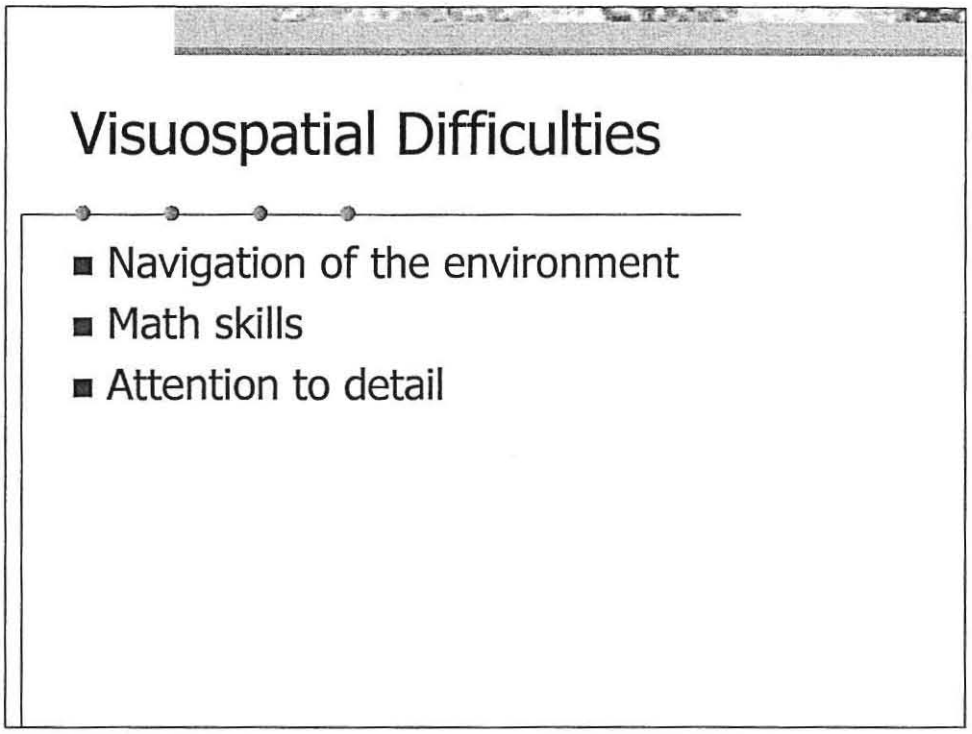

Problems

Attention

- Problems with attention can affect memory by:
  - Being distracted by external environmental stimuli
  - Inability to focus to recall correct information

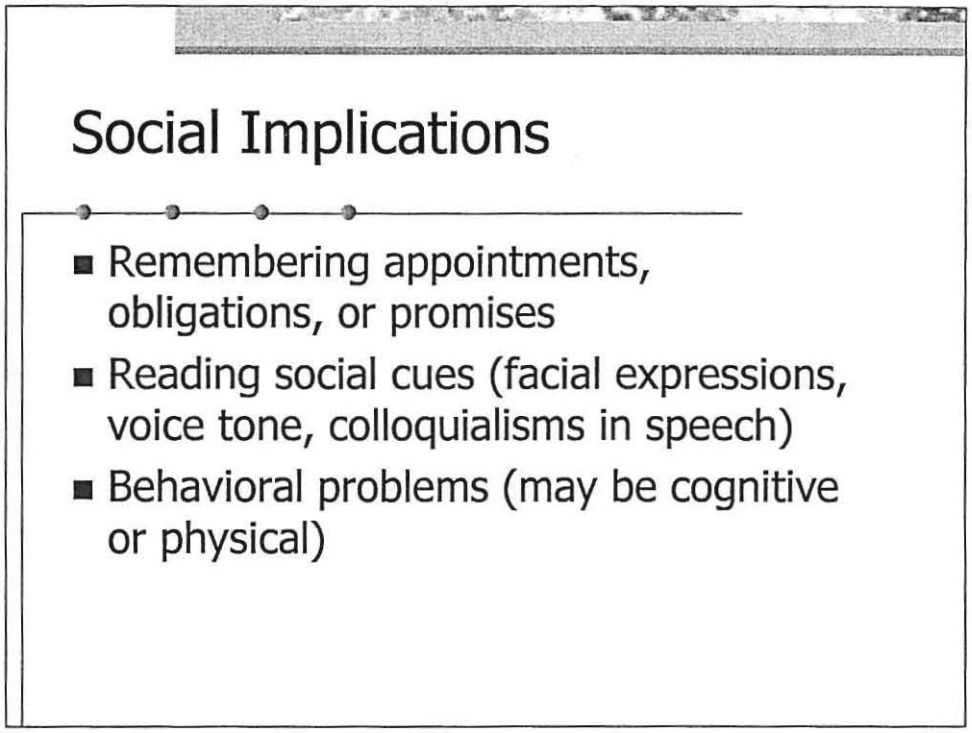
Processing Speed

- Processing speed can affect memory by forcing the student to take much more time than normal to recall the correct memory
- May take more time than normal to determine that no memory can be retrieved



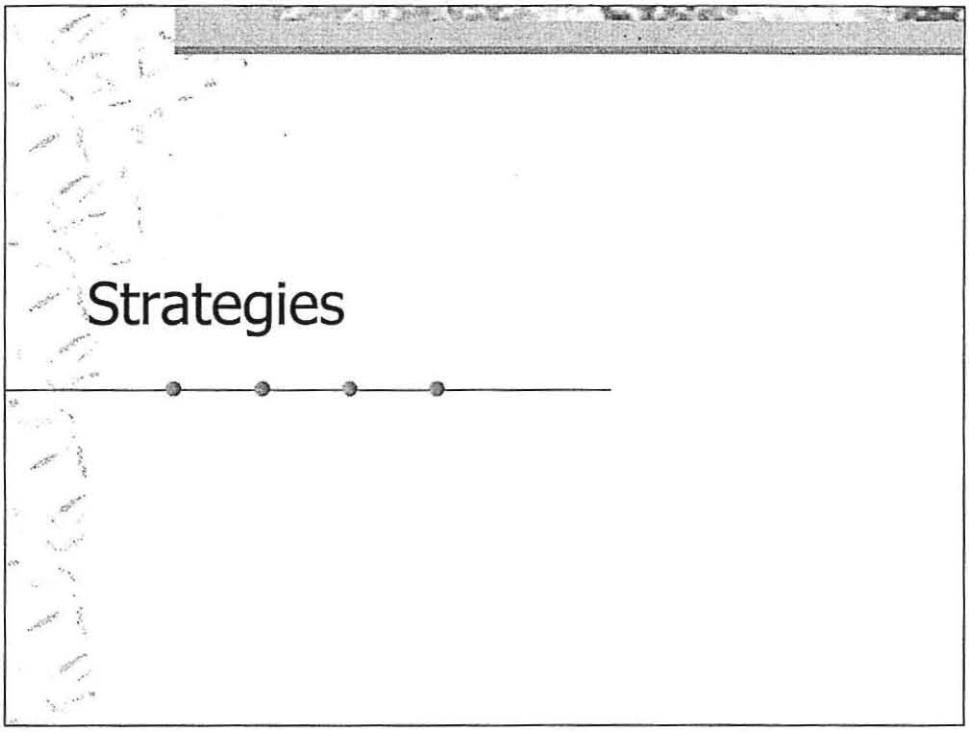
It is difficult for a student to landmark the environment using visual memory, and discern objects due to problems with figure ground (the ability to pick out important information from the background information).

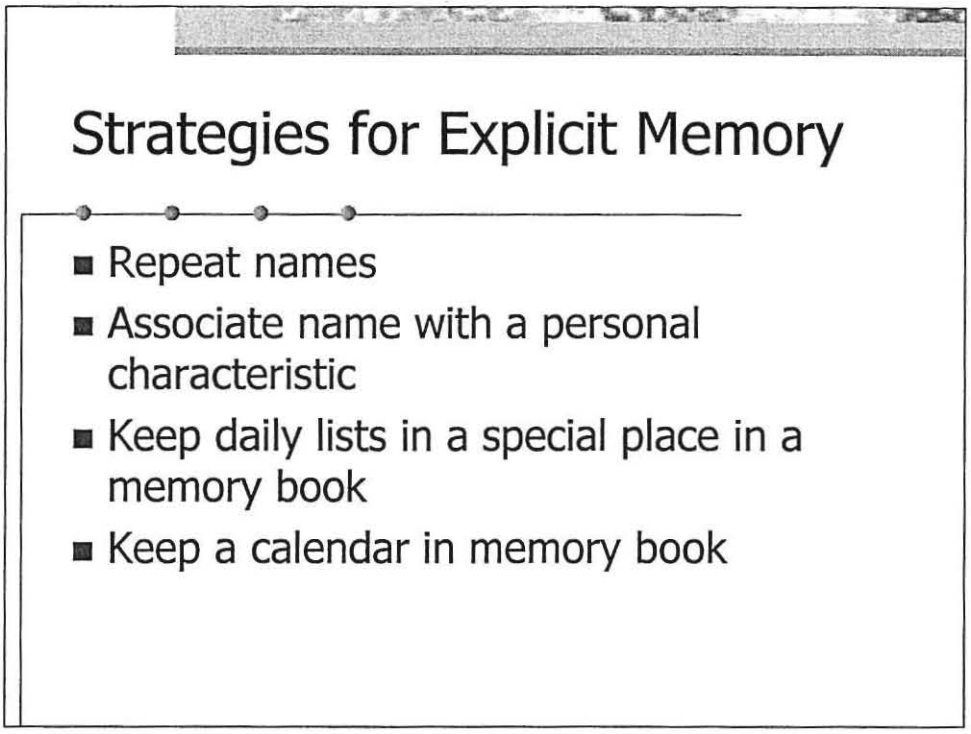
Spatial concepts are difficult to grasp



Memory loss can affect the way a person interacts nonverbally. Details once known about the behavior of others can be lost.

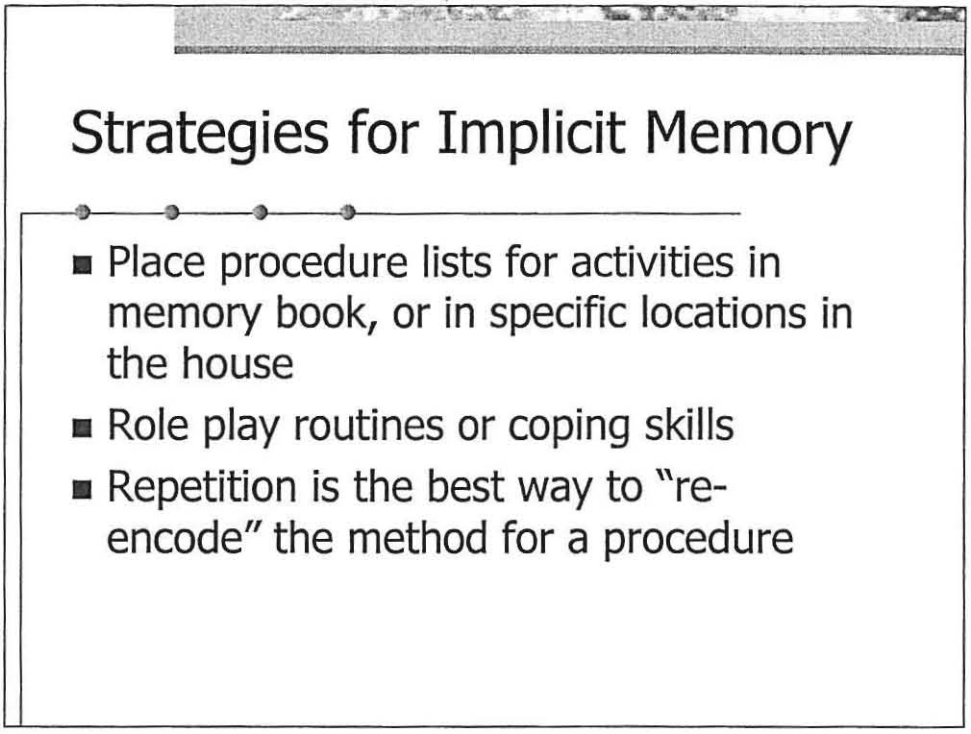
Memory problems can add to frustration, and other problems connected with brain injury such as sensory issues. for instance, a student may have worked through a childhood fear of certain sounds or activities, such as sirens or flying in an airplane. The brain injury may cause a loss of those coping skills, and the fears return.


Strategies



Personal characteristics could include things like hair color, car type, sharing a class, etc.

A memory book may have several sections, but it is important that all memory requirements be kept in one book, so that there is only one place to go for things that need to be remembered. An alarm watch set to go off every hour or every class period can be used as an indicator to check the memory book.



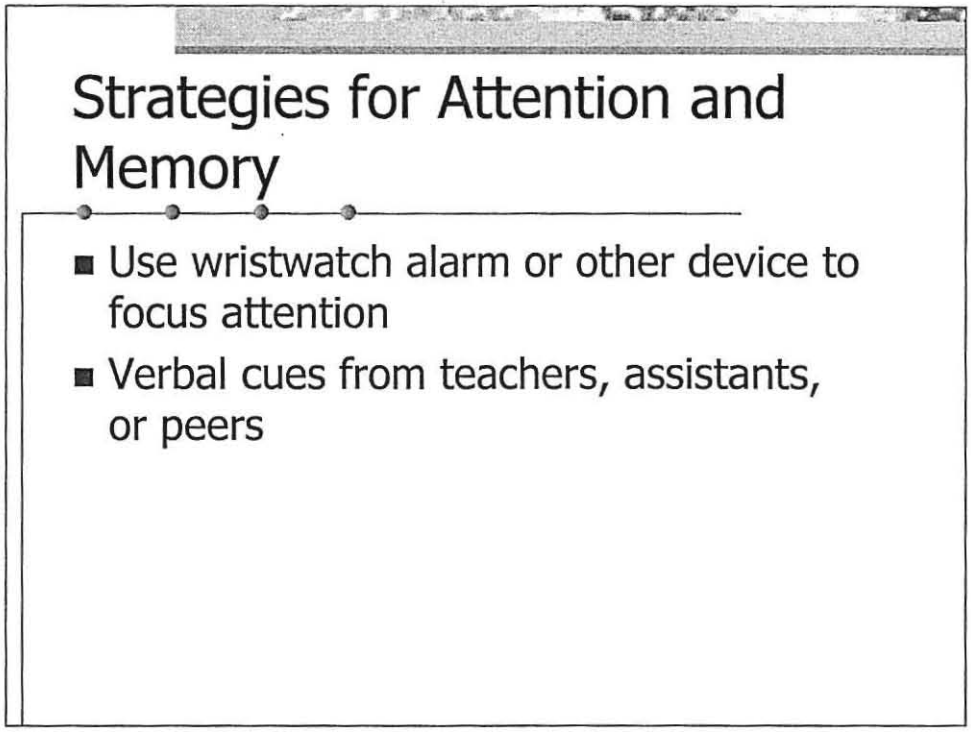
Make-up routine kept in a vanity drawer
Basic clothes sorting and washing instructions posted in the laundry room

Coping skills might be needed for such things as a phone busy signal, or a missed bus.

Caution - if the procedure ever needs to be changed, this may be difficult to do (new locker combination in a new school year)

Strategies for Prospective Memory

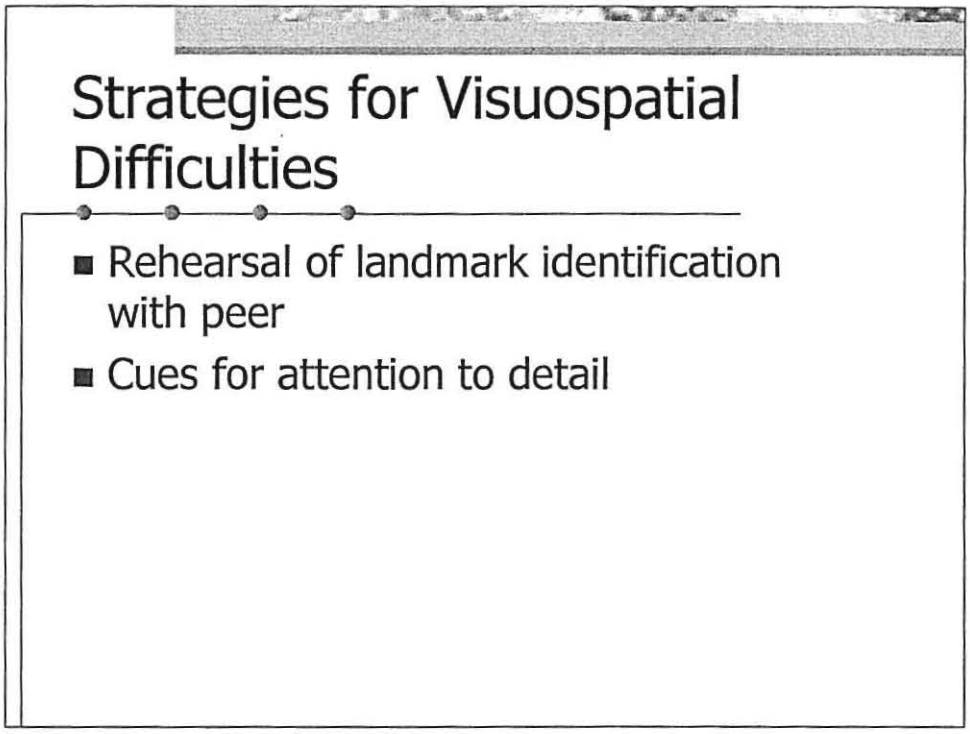
- Keep a planner with all appointments
- Role play entering appointments in the planner
- Use of mentor to assist with entries and check planner



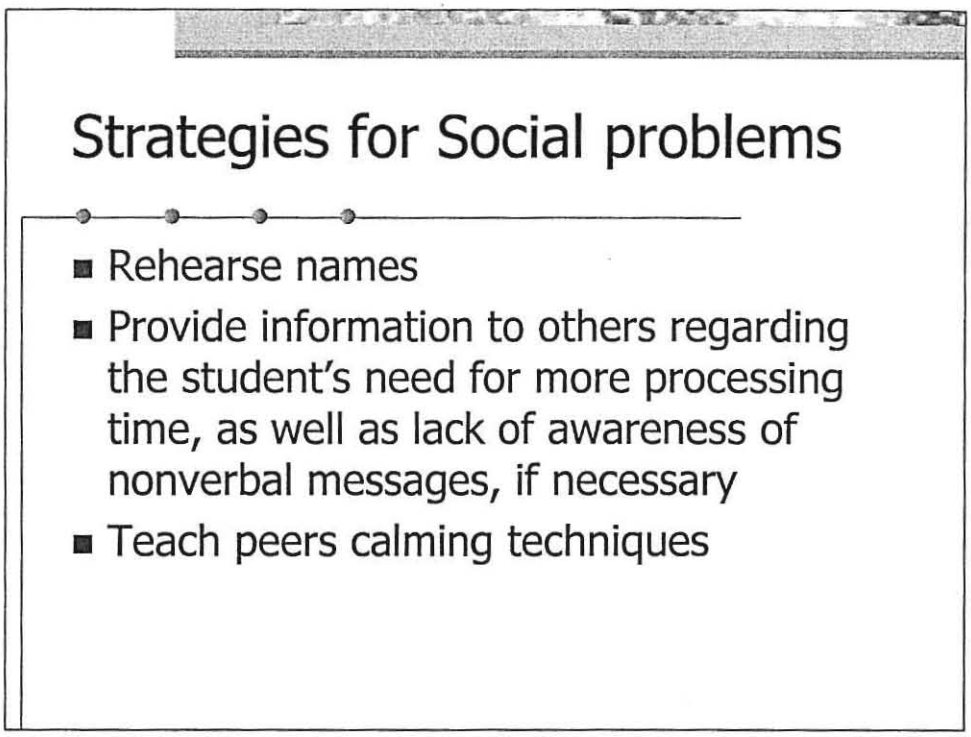
devices can include different colors of jewelry or armbands, color coded notebooks for classes

Strategies for Processing Speed and Memory

- Educate others about the student's processing speed difficulties
- Allow more time for work and tasks (Morton, personal communication)



Cues can include a note in the memory book, cues from instructor while in classroom



Calming techniques can include such things as helping student count to 10, moving to a quieter location, instructing them to consult memory book, etc.

Srategies for Motivation Problems

- Some students respond positively to a system of rewards
  - Tangible - food or desired items
  - Less tangible - money or tracking successes
- Sometimes what is seen as a motivational problem may actually be difficulty with attention or processing speed

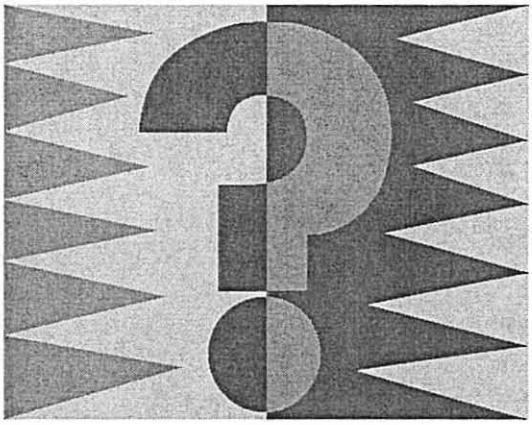
Monitoring Strategies

- It may be useful for staff to keep a log of what techniques have been tried, and how successful they were
- Include detailed instructions for procedures that are successful and which ones are currently being used.

Other Caregivers

- Check with parents to see which strategies are working for them at home
- Duplicate strategies whenever possible to avoid confusion and provide consistency for the student

Questions??



Activity

Memory Quiz - Listen to the vignette, then answer the following questions:

1. When is Jack's evening rehearsal?
2. Name the girl he has a crush on.
3. How many minutes late to class was Jack?
4. What did he wear to remind him to pick up his costume?
5. What type of memory are we using to complete this exercise?

Jack is a freshman in high school. Today is a big day for him. He is very excited about the first performance of the school play this evening. He is expected to be present at two rehearsals today - one in class and one at 6:30 p.m. before the play. In the hall on the way to class he runs into Heather, Ashley, and Cynthia. He really has a crush on that middle one! He stops to review their brief conversation in his mind, and as a result is 7 minutes late to class. He is wearing a ring from his stage costume to remind him to pick up the rest of his costume at 3:20 before leaving school. He is especially excited because his parents and both sets of grandparents are planning to attend.

Post - Test

- T F Few TBI survivors have difficulty with memory
- T F Memory for planning future actions is often affected adversely by TBI
- T F Memory loss can severely affect social participation
- T F Students with TBI rarely experience anxiety over memory loss

References

- Morton, K. (Personal communication). January 5 - March 30, 2006.
- Ward, H., Shum, D., Dick, B., McKinlay, L., & Baker-Tweeney, S. (2004). Interview study of the effects of pediatric brain injury on memory. *Brain Injury, 18*, 471-495.

PARTICIPANT EVALUATION OF MODULE

Name of Module:_____

Date of Presentation:_____

Location of Presentation:_____

Please rate the statements below according to the following scale:

1=Strongly Disagree; 2-Disagree; 3=Neutral; 4=Agree; 5= Strongly Agree

1. _____ The information presented in this module promoted my learning.

   For instance:

2. _____ The information was presented clearly and concisely.

   For instance:

3. _____ The strategies are logical and can be applied to my situation.

   For instance:

4. _____ The presenter was knowledgeable and respectful of my circumstances.

   For instance:

5. _____ Activities presented were practical and contributed to my learning.

   For instance:

6. _____ All of my questions were answered thoroughly.

   For instance:

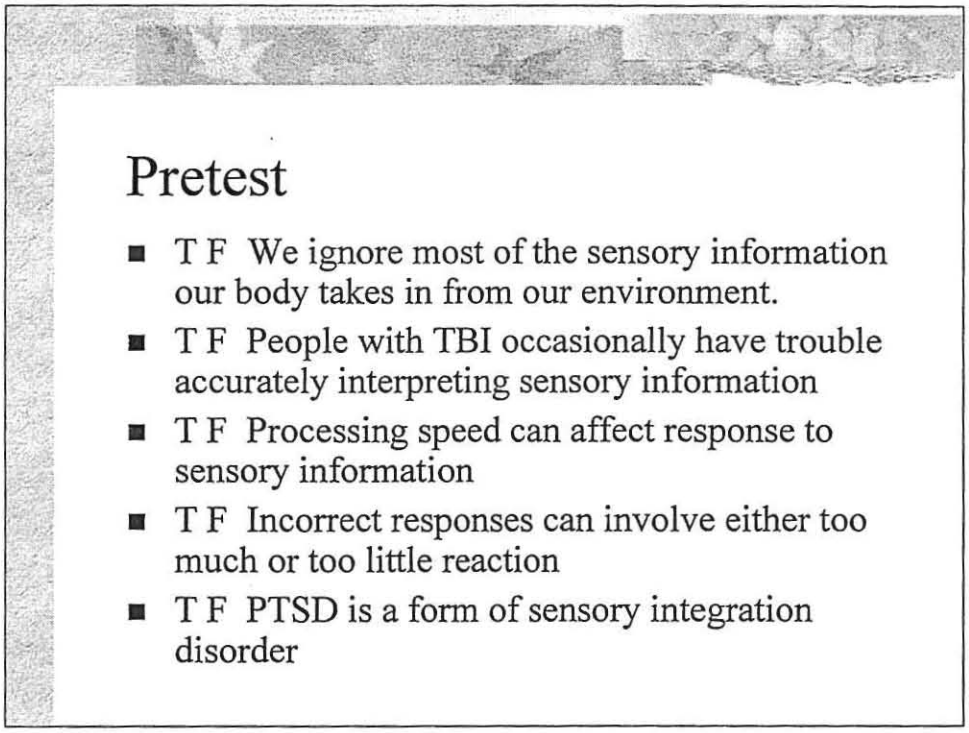
Additional Comments:

MODULE III

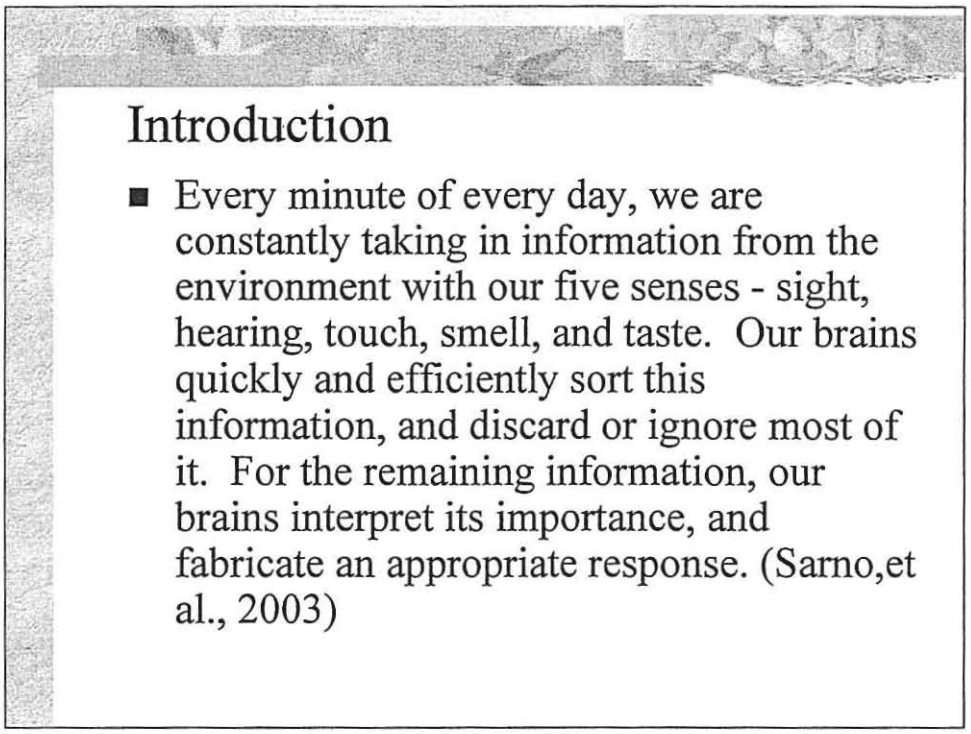
SENSORY

Sensory

Brain Injury and its Effects on
Sensory Interpretation and Response



T	Slide 3
F	Slide 7
T	Slide 6
T	Slide 8
T	Slide 10



□o an environmental awareness exercise - what is going on now in this room that most of us are

A cough from presenter, vs. presenter calling a person's name. The person will ignore the coug

Sensory Problems

Sorting Sensory Information

- Attention is the biggest contributing factor to accurately sorting sensory information
  - Student cannot decide which stimulus on which to focus
  - Student cannot maintain attention once focal point is established

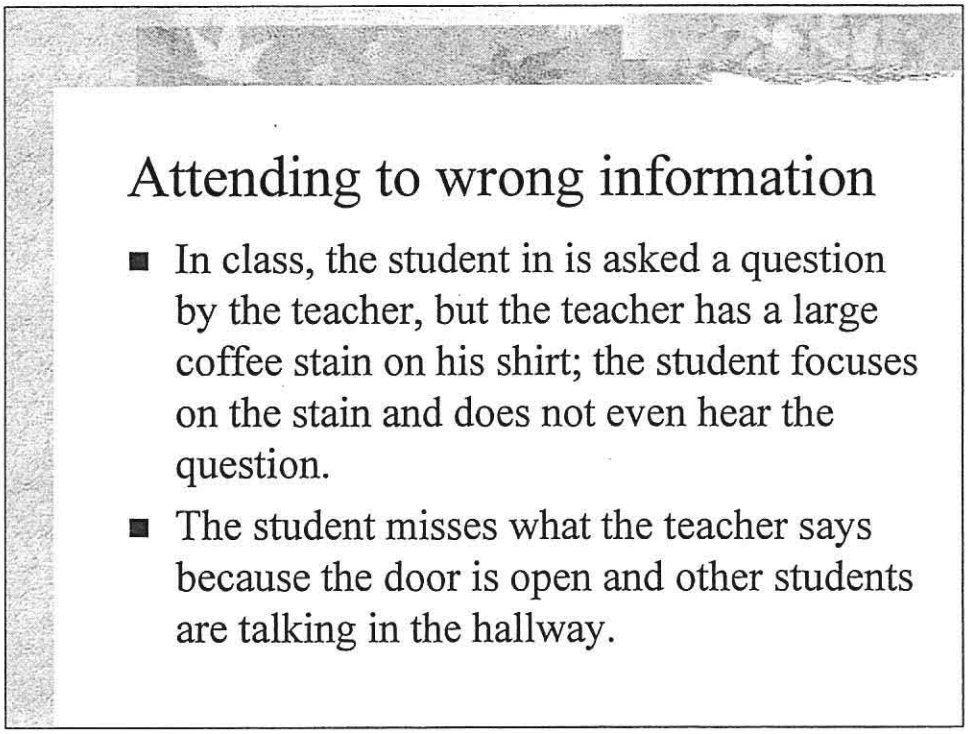
Focus problems may be an intentional process

("I can't decide what to do!") or a subconscious one due to other factors

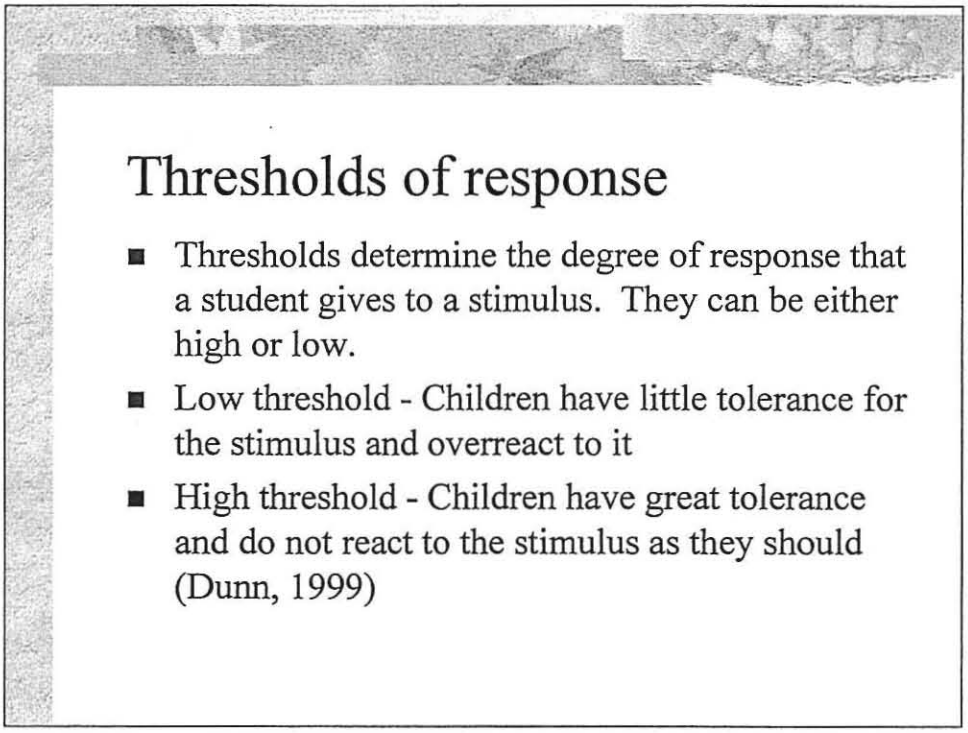
Sorting Information continued

- Student may have delays in processing speed which make it difficult to sort and respond to information in a timely manner (Rios, et al., 2004)
- Processing speed problems can cause both academic and social difficulties

Greeting friends as they pass in the hallway en route to the next class – each face goes by too quickly to process identity, retrieve the name, formulate the appropriate response for that person, and deliver it before the next person says "Hi"-resulting in social misconception – "He's stuck-up!"



We all sometimes respond to the wrong information, but we can quickly bring ourselves to attention to task. The person with TBI may have far greater difficulty refocusing and correctly interpreting different information.



Low thresholds are often involved with fears

Responding incorrectly to information

- Student responds to another's greeting with "Stop yelling! Why are you so loud?"
- Student spits out an unfamiliar food he has tried at lunch in the cafeteria
- Student receives a bleeding cut or scrape while outside, and does not respond to it or ask for help
- Incorrect responses can also result from frustration caused by slow processing or attention problems.

PTSD

- Post traumatic stress disorder, or PTSD, is a form of sensory dysfunction.
- Thresholds are low, and those affected overreact to present stimuli, or to memories of past stimuli
- People can experience PTSD from the events that caused their brain injury
- Symptoms must be present for more than one month, and be significant enough as to interfere with normal function in daily life (Mather, et al., 2003)

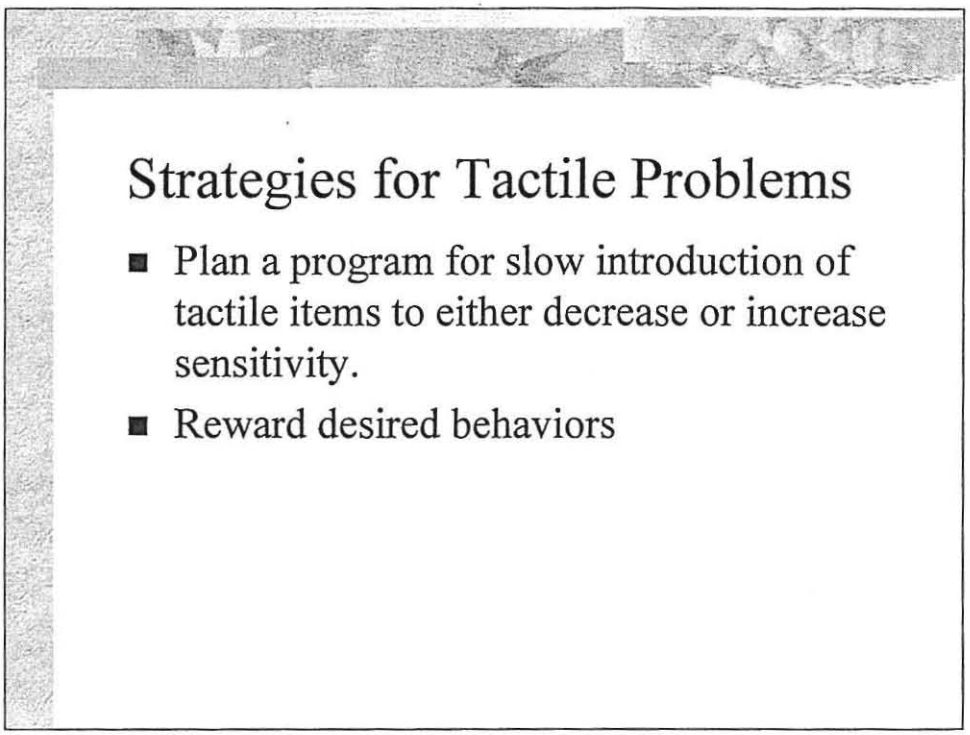
Strategies

Strategies for Visual Problems

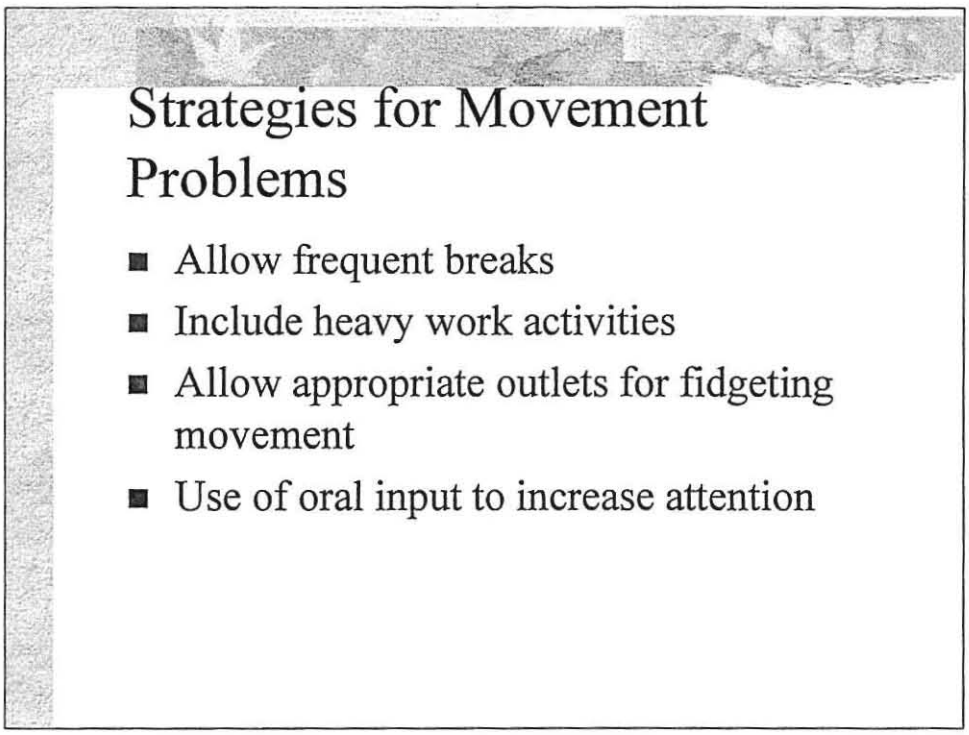
- Reduce distractions in the immediate environment
- Introduce visual changes slowly and with explanation
- Control light levels in the environment
- Control glare

Strategies for Auditory Problems

- Reduce sound in general in the immediate environment
- Increase attention on desired sound
  - Cueing for attention
  - FM system
- White noise as a calming strategy



Use items in highly desired activities

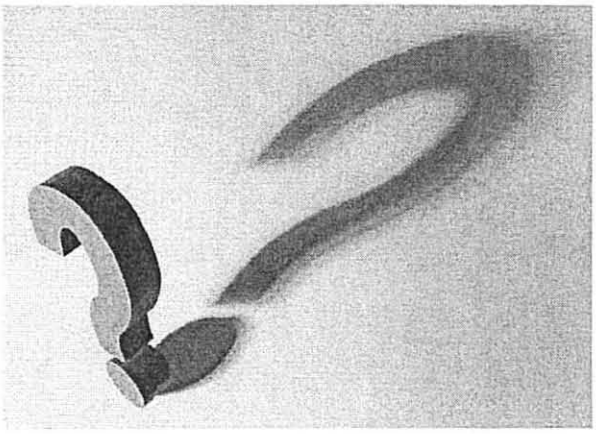


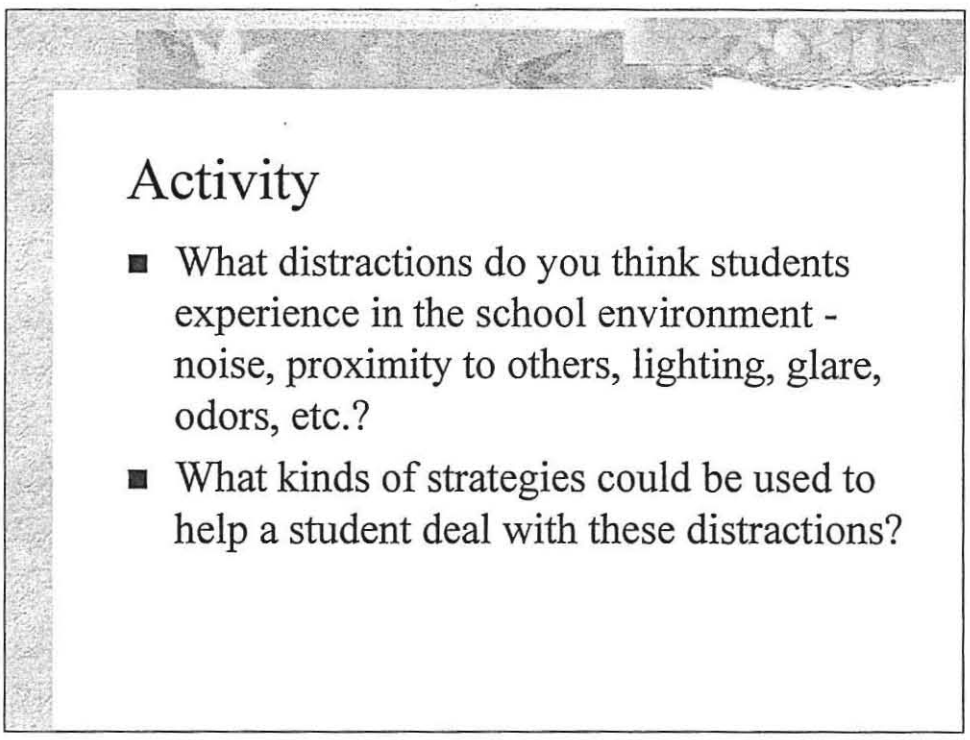
playground activities for younger students; physical education, swimming, and or work such as carrying books for older students). This gives calming proprioceptive input.

Oral input - chewing gum, water bottle, frequent small snacks

Use of fidgets or discosits

Questions??





This is a brainstorming activity – have the participants come up with responses for the first question

Write the answers on the board

Write down any audience-generated strategies that seem useful

You can also add to the answers by using strategies presented to demonstrate how the problems might be approached

Post - Test

- T F We ignore most of the sensory information our body takes in from our environment.
- T F People with TBI occasionally have trouble accurately interpreting sensory information
- T F Processing speed can affect response to sensory information
- T F Incorrect responses can involve either too much or too little reaction
- T F PTSD is a form of sensory integration disorder

References

- Dunn,W. (1999). *Sensory profile user's manual*. USA: Psychological Corporation.
- Mather, F., Tate, R., & Hannan, T. (2003). Post-traumatic stress disorder in children following road traffic accidents: a comparison of those with and without traumatic brain injury. *Brain Injury 17*, 1077-1087.

References continued

- Rios, M., Perianez, J, & Munoz-Cespedes, J. (2004). Attentional control and slowness of information processing after severe traumatic brain injury. *Brain Injury, 18*, 257-272.
- Sarno, S., Lutz-Peter, E., Lipp, B., Schlaegel, W. (2003). Multisensory integration after traumatic brain injury: a reaction timestudy between pairings of vision, touch, and audition. *Brain Injury, 17,* 413-426.

PARTICIPANT EVALUATION OF MODULE

Name of Module:_____

Date of Presentation:_____

Location of Presentation:_____

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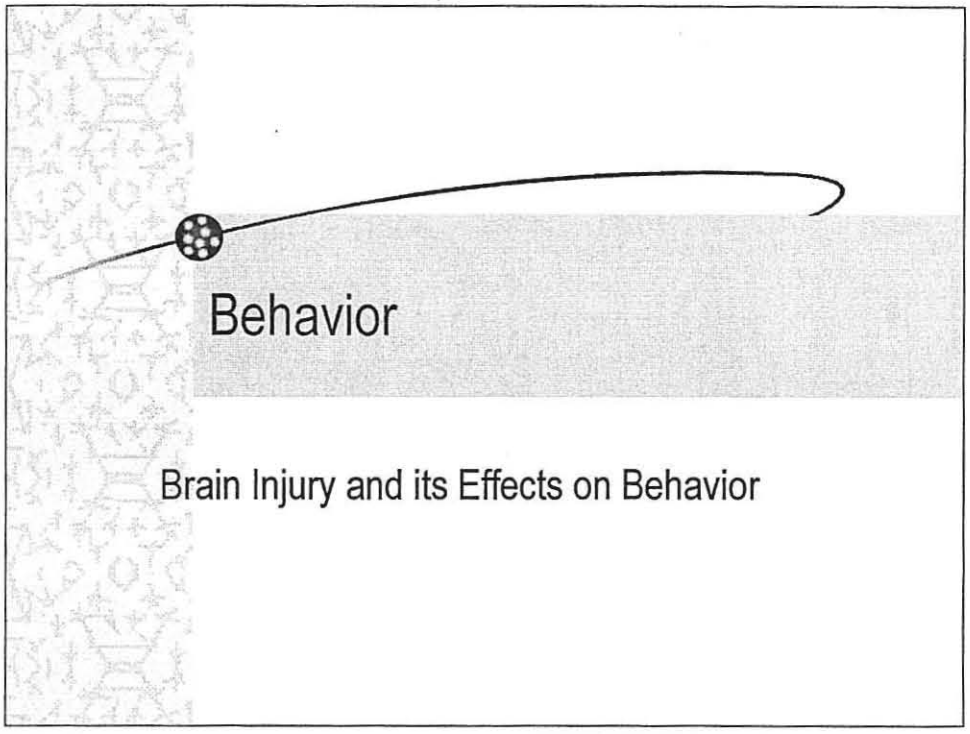
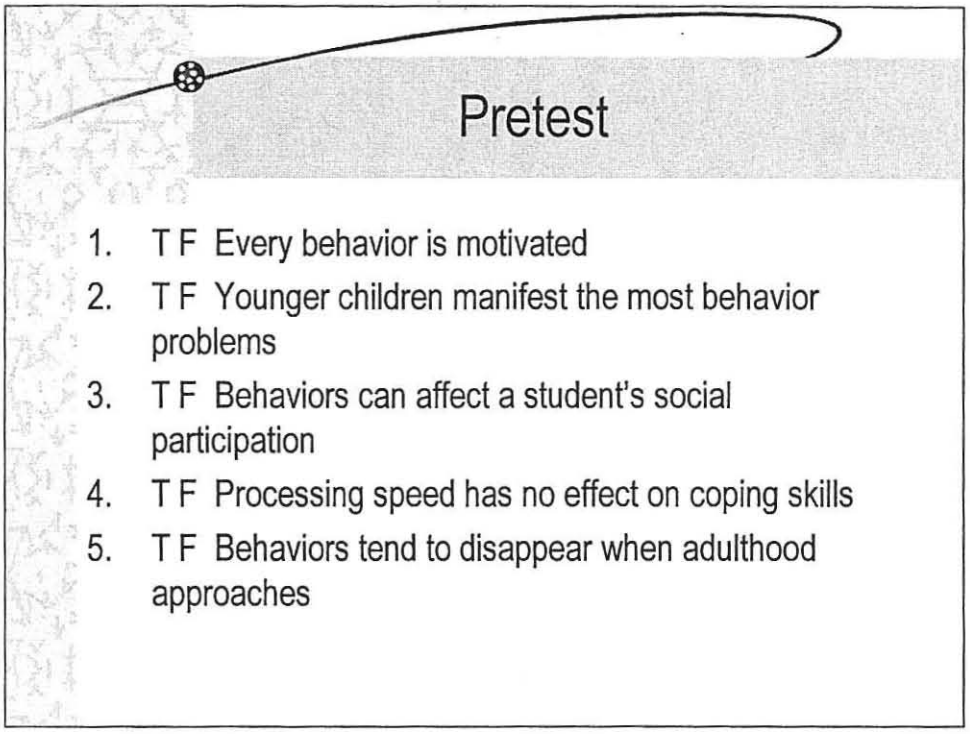
Additional Comments:

MODULE IV

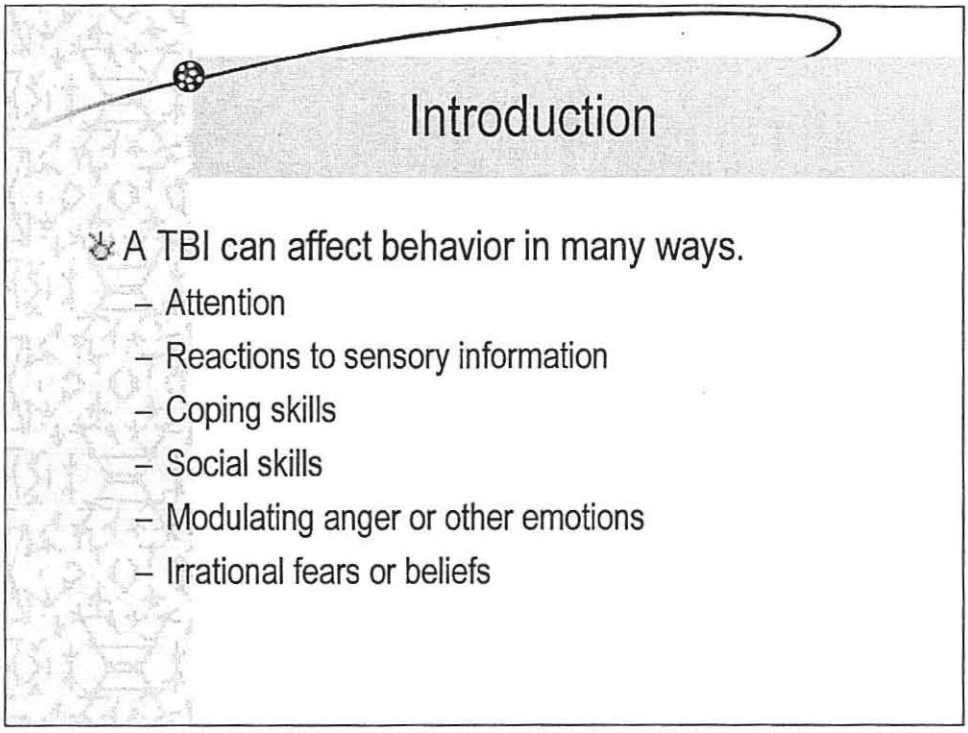
BEHAVIOR


Behavior
Brain Injury and its Effects on Behavior

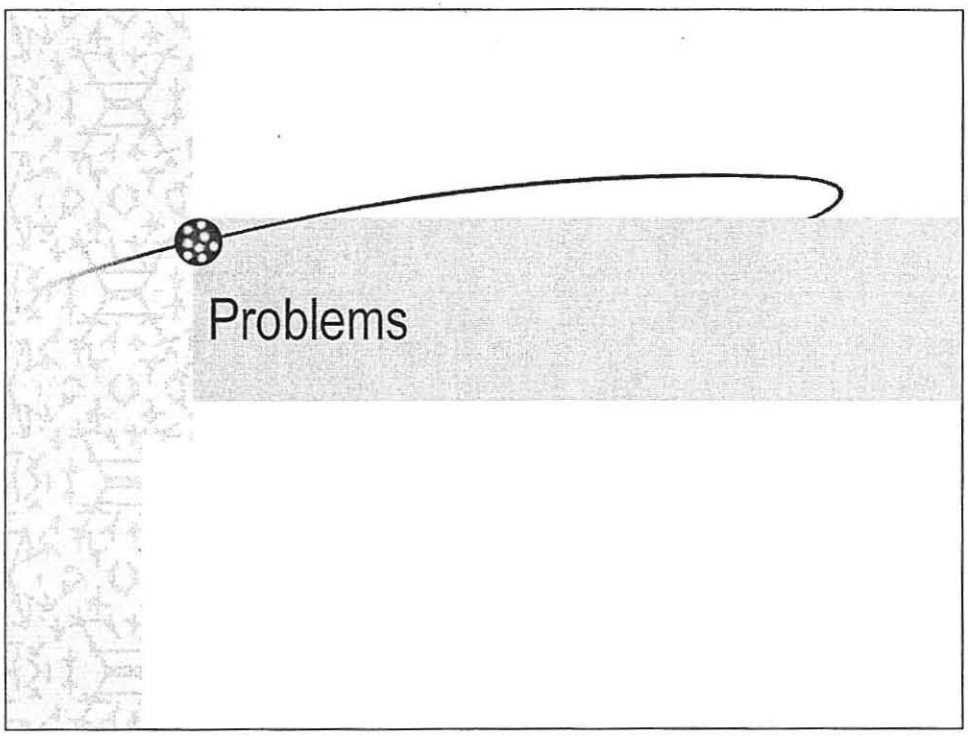


Answers:

1.	T	Slide 3
2.	F	Slide 14
3.	T	Slide 9
4	F	Slide 8
5	F	Slide 14

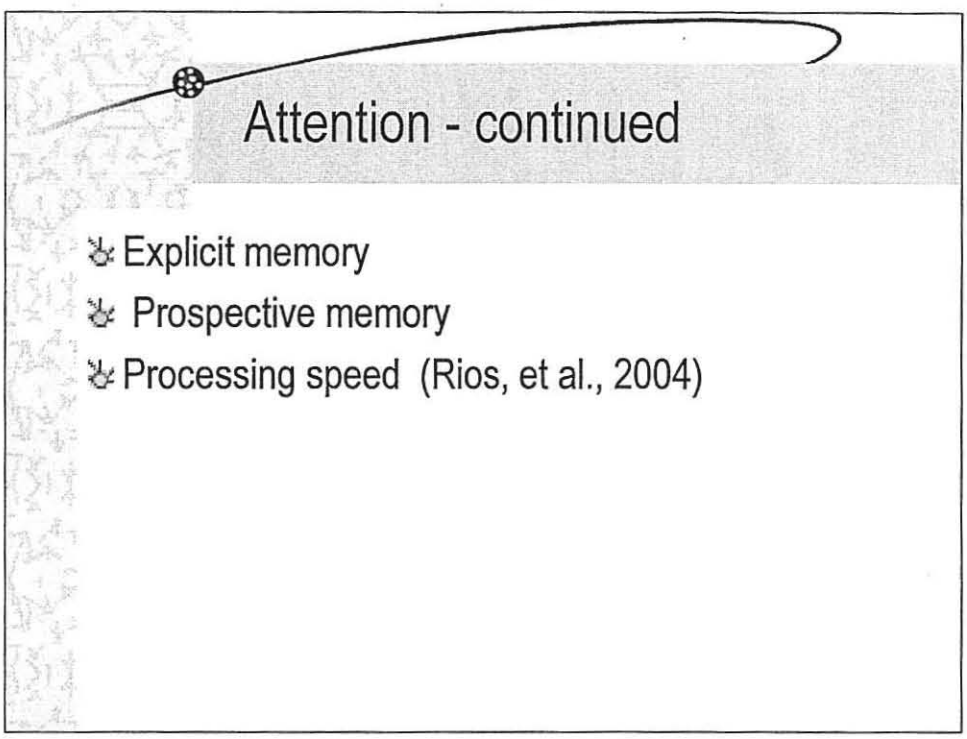


Every behavior that humans present is motivated on some level.
The motivation may be misguided or stem from wrong information,
but still the student is attempting to send a message about, or change something
in either his internal or external environment.

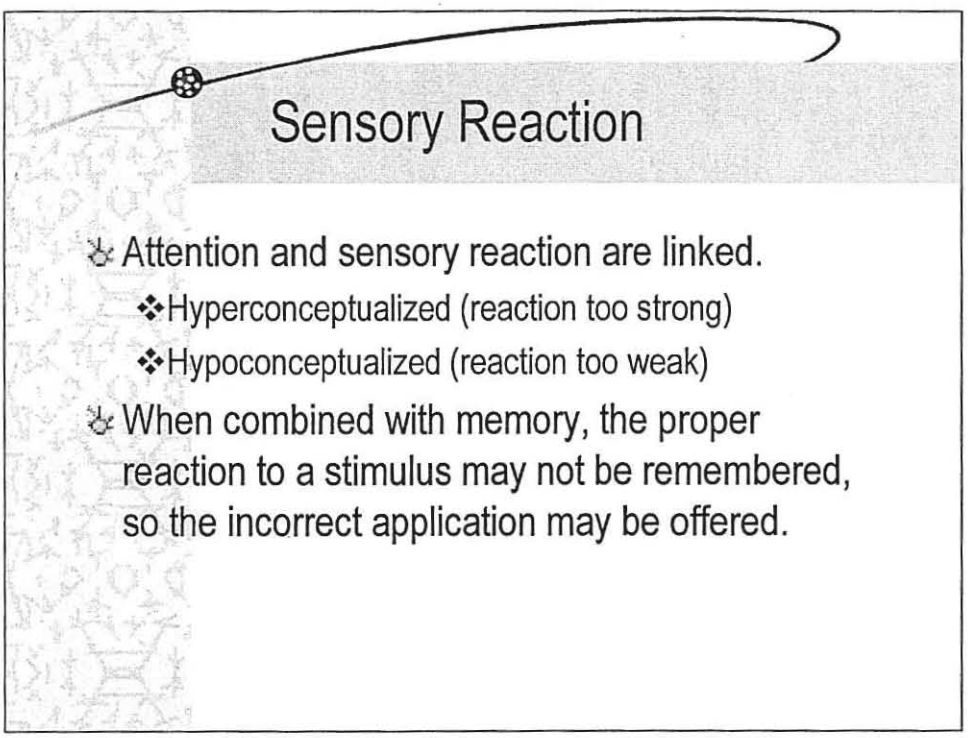

Problems

Attention

- Problems with attention span can affect all aspects of behavior, and life in general. The student with attention difficulties can demonstrate concurrent problems with memory, sensory issues, and social interactions.



1. Explicit memory – memory encoding – the ability to remember recently acquired information. Examples include directions given in class, or the name when introduced to a person.
2. Prospective memory – "remembering to remember" – advance planning and recall of actions performed
3. Processing speed – this can directly affect attention -- For example, when one student passes another in the hallway, slow speed of facial recognition and delivery of the appropriate greeting may be interpreted as inattention to the friend, who does not hear the reply because it is delivered 5-10 seconds after the passing.

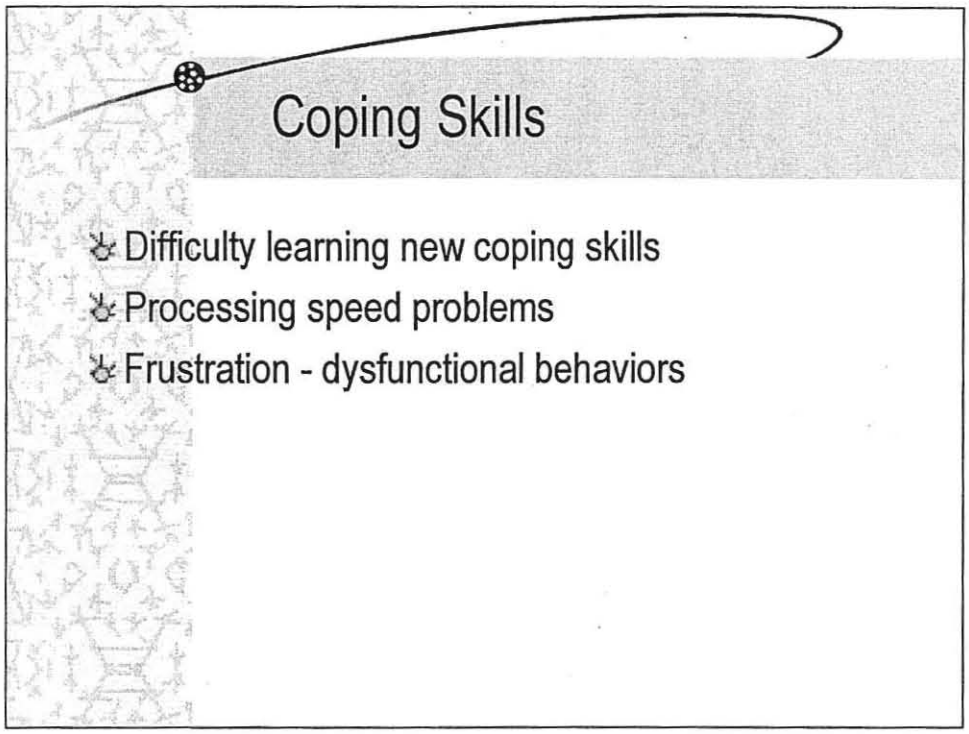


Attention problems can cause sensory information to be incorrectly processed

Hyperconceptualization (too strong) thinks all foods are too hot, and therefore Refuses to eat lunch due to fear of getting burned.

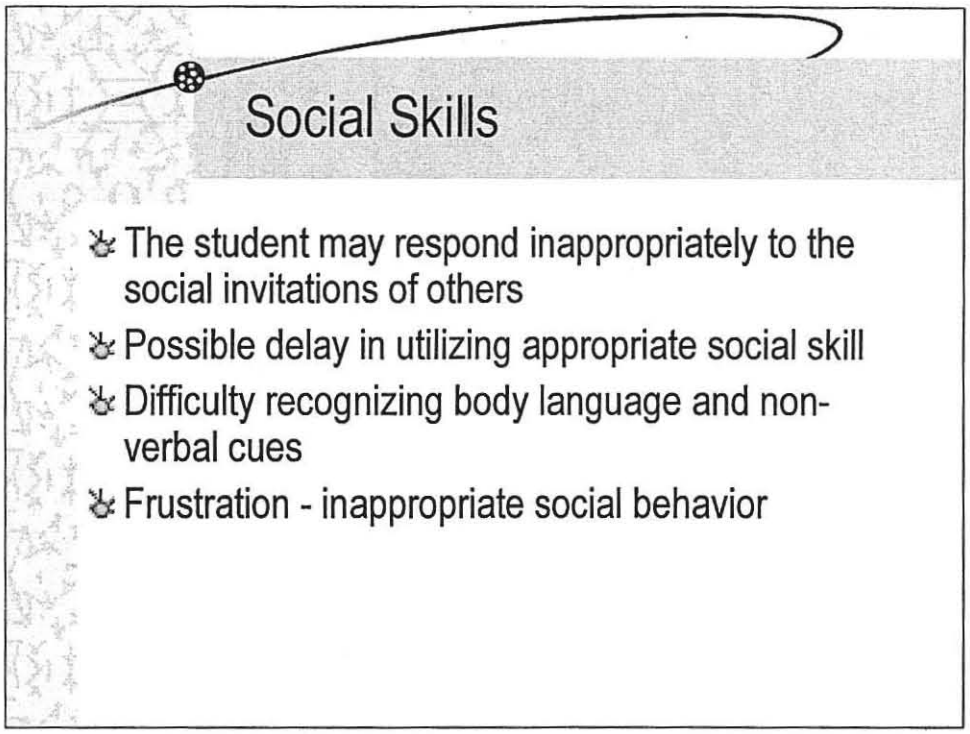
Hypoconceptualization (too weak) Difficulty differentiating between teachers Voice and background noise from open door, so does not respond to directions

Proper reaction to stimulus - Knows that some spiders are poisonous, so whenever he sees a spider, he reacts with overt fear and panic

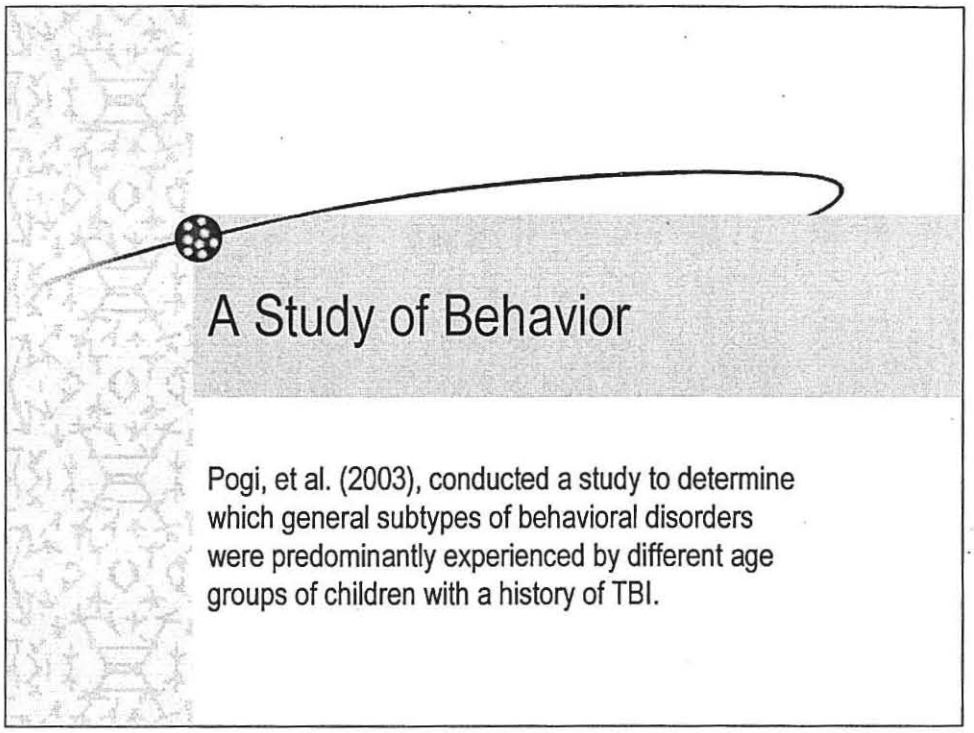


Coping skills are a process that a person learns to create a successful response to a situation.

1. the student may have difficulty learning new coping skills due to memory and attention problems
2. the student may have problems choosing or retrieving the correct coping skill due to the inability to process the information fast enough
3. the student may become frustrated because of incorrect or inadequate coping and this can lead to dysfunctional behaviors - anger over repeatedly breaking pencil lead during a written assignment, or covering ears and screaming because the student hears a police siren and is afraid.



1. the student may be too slow or fast to greet or respond in conversation
2. the student may not be able to process fast enough to utilize the appropriate social skills for the situation
3. the student may have an inability to recognize and respond appropriately to body language and non-verbal cues of others "in another's space"
4. frustration results in a display of inappropriate emotions – fear, sadness, anger, hyperenthusiasm


A Study of Behavior
Pogi, et al. (2003), conducted a study to determine which general subtypes of behavioral disorders were predominantly experienced by different age groups of children with a history of TBI.

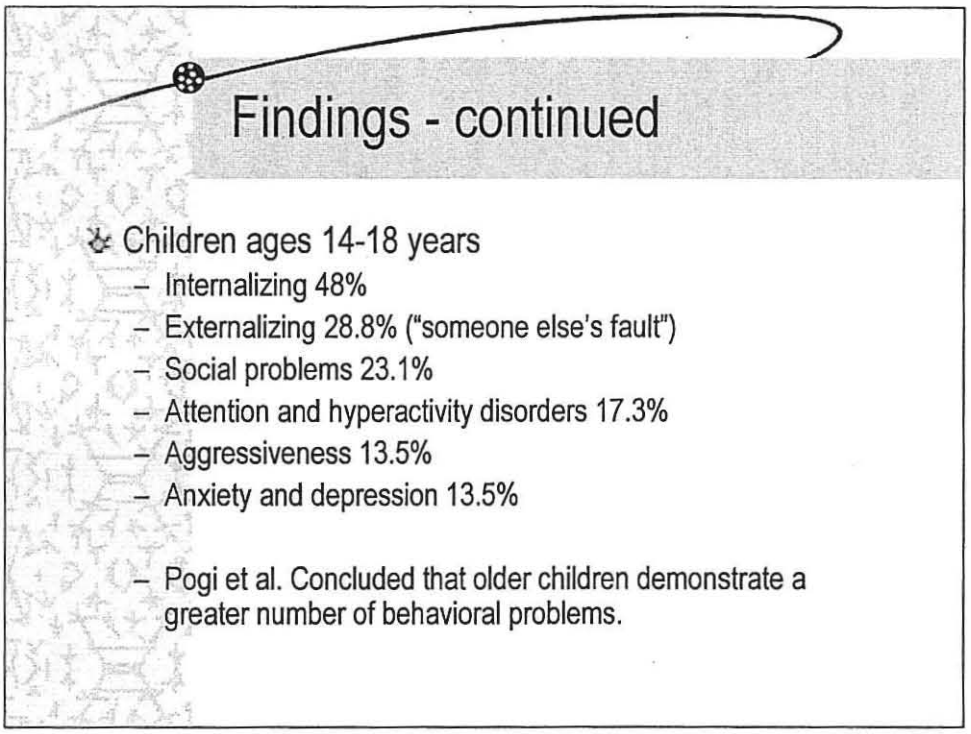
The information from this study is useful because it demonstrates how behaviors manifest in different age groups. This gives insight into which problem behaviors are likely to trouble the adolescent TBI population, and may offer insights into designing effective treatment plans.

Study Findings

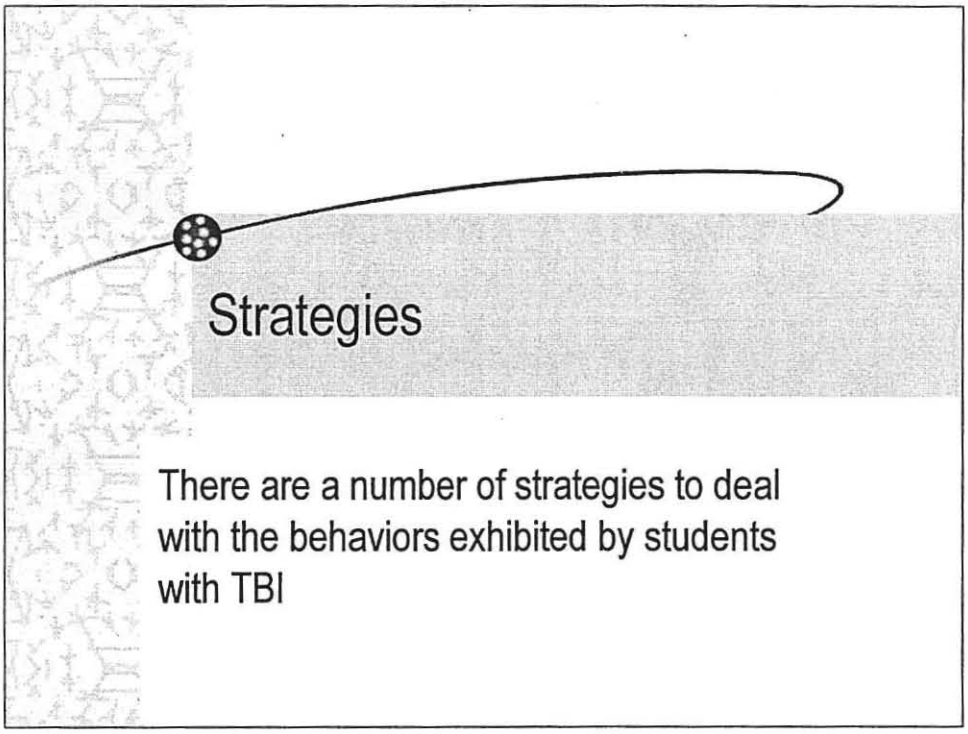
- Children ages 0-6 years
  - Internalizing 33.3%
  - Withdrawal 25%
  - Social problems 16.7%

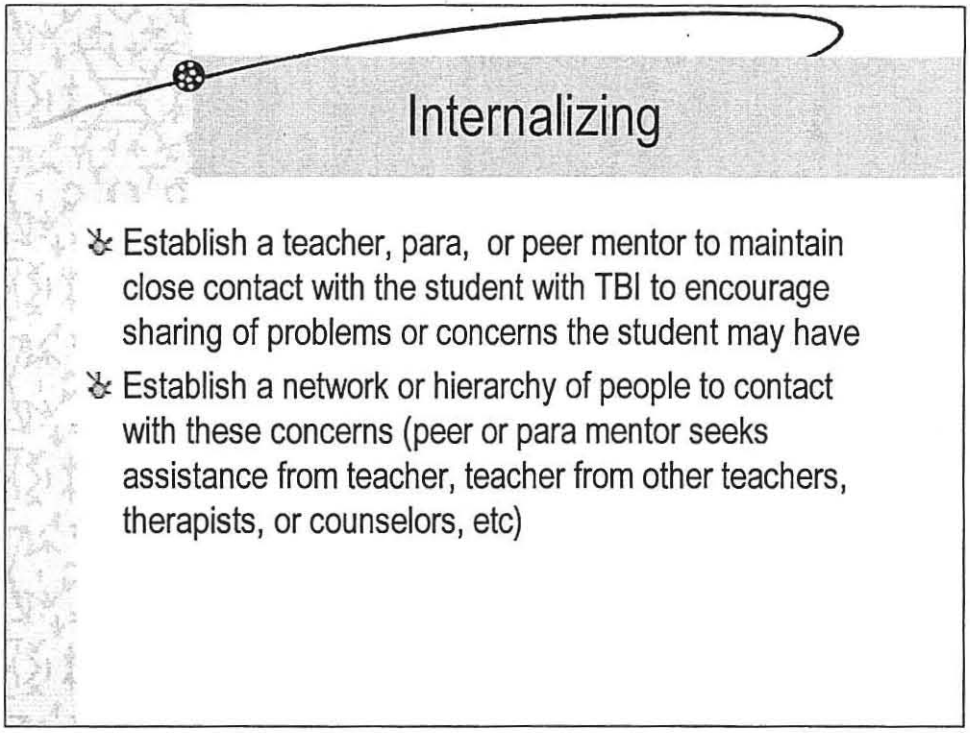
Findings - continued

- Children ages 7-13 years
  - Internalizing 65%
  - Withdrawal 30%
  - Attention and hyperactivity 30%
  - Aggressiveness 30%



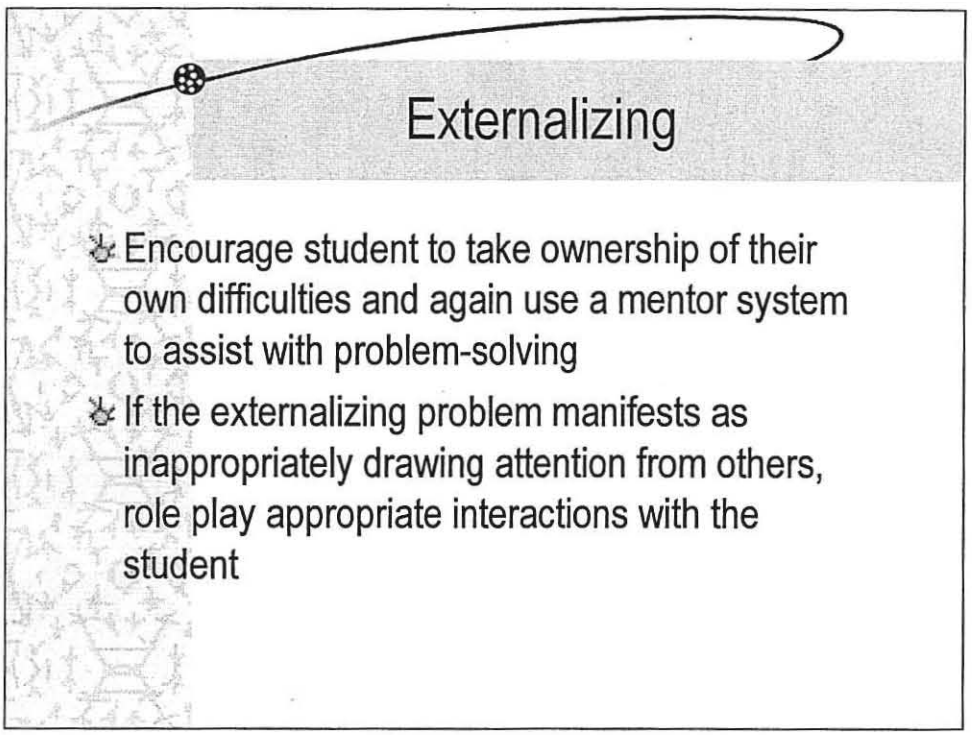
Adolescents are likely to demonstrate more frequent or severe behaviors. The severity of the behaviors depends upon how well they can conceptualize what they want or need, versus how their current performance measures up to these desires.


Strategies
There are a number of strategies to deal with the behaviors exhibited by students with TBI

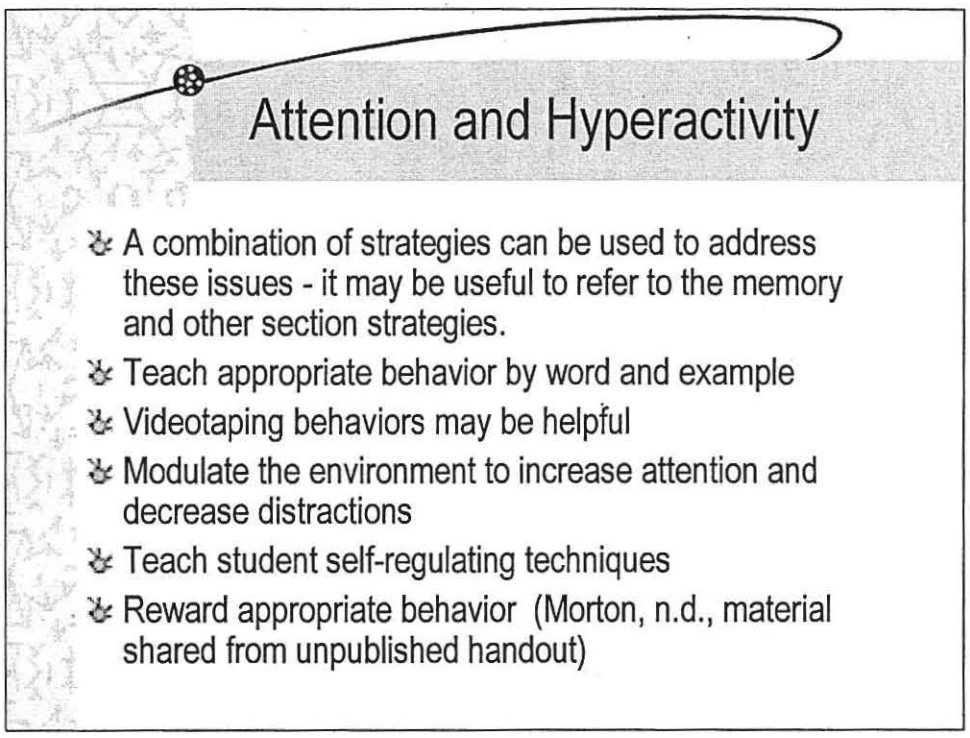


"You can talk to me - if I don't know the answer, I will find someone who does know the answer".

Having one "go to " person can increase security and reduce internalizing. It creates this security by assuring the student that they can get help without being judged or challenged. Having a network in place increases the number of ideas, and creates confidence in both the student and in the paras who are charged with helping that student on a daily basis.



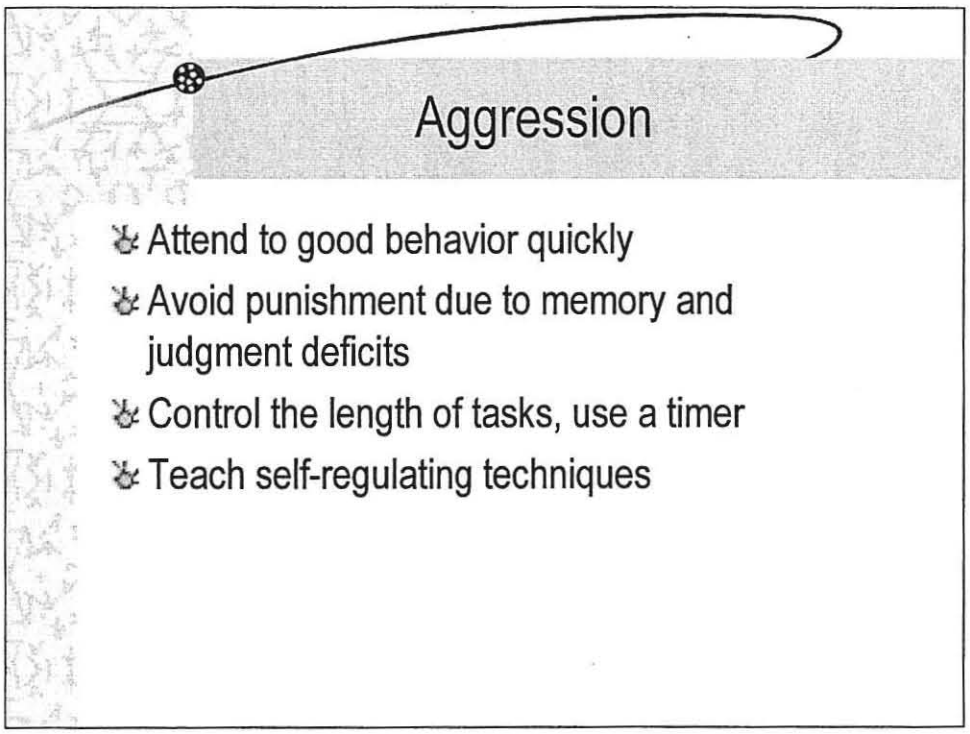
Here, the student engages others too frequently, or blames others for problems. Establishing a mentor reduces the number of people that the student is allowed to contact for questions. The mentor can help the student to prioritize and correctly time questions. For example, a question about what movies are playing on the coming weekend should not be asked when the student is late to class.



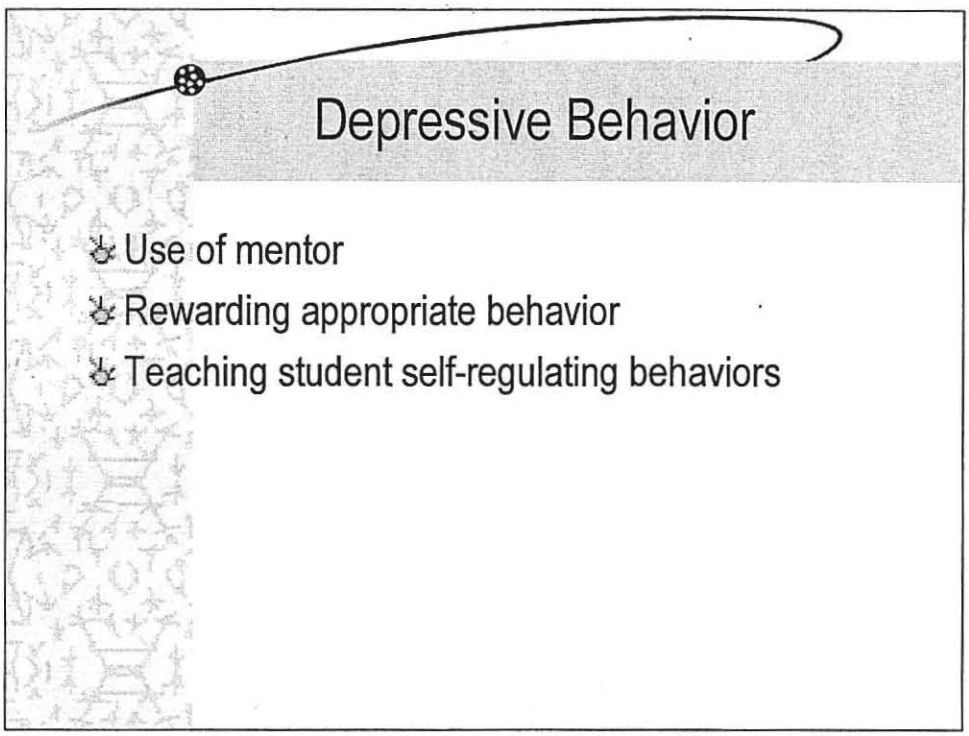
Repetition is key - especially when explicit memory encoding is a problem

Self Regulating Behavior

- Count to 10
- Teach simple relaxation techniques
- Use of fidgets, chewing gum, etc. to help organize behavior
- Use of mentor to assist with problem identification



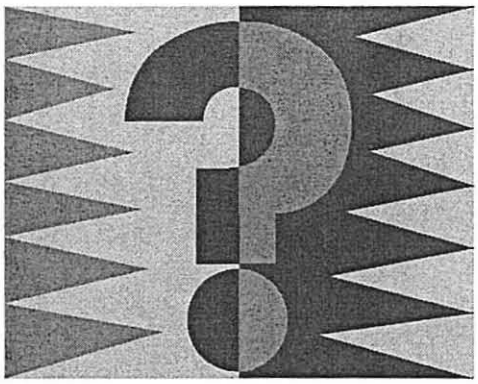
Reward systems can be very effective in assisting adolescents with TBI to modify their behavior. Depending upon the student, the best rewards can range from abstract (verbal praise) to extended gratification (a sticker system to obtain a reward at the end of the week) a favorite activity, or more concrete rewards such as food or school supply items like colored pencils, etc.

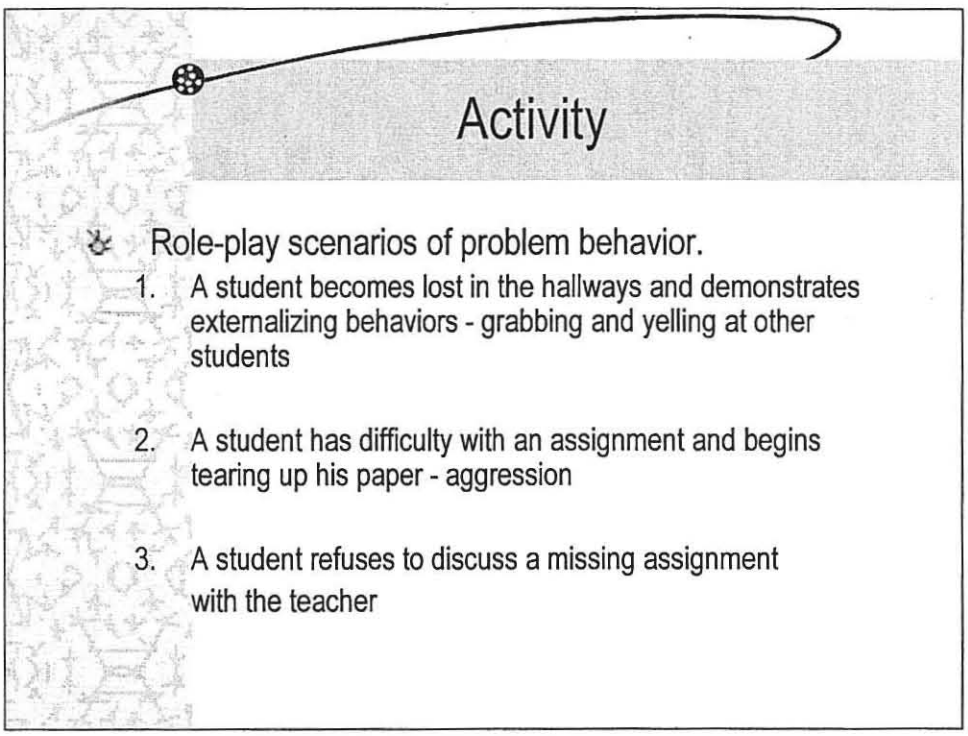


A mentor can provide understanding, as well as awareness in the event that the student's condition worsens.

Rewards and recognition can help to alter negative moods

Questions??





Participants will divide into small groups of possible - preferably 2-4 people. Each group will take a problem scenario. The groups will work out exactly what the problem is, and attempt to determine what is causing the student's frustration.

The group will decide on two or more strategies that may help with the problem, assign roles, and act out the vignette for the larger group

Solicit problem scenarios from the group that they have encountered and brainstorm solutions together -

Post - Test

1. T F Every behavior is motivated
2. T F Younger children manifest the most behavior problems
3. T F Behaviors can affect a student's social participation
4. T F Processing speed has no effect on coping skills
5. T F Behaviors tend to disappear when adulthood approaches

References

- Pogi,G., Liscio, M., Adduci,.A., Galbiati, S., Sommovigo, M., Degrate. A., et al. (2003). Neuropsychiatric sequelae in TBI: a comparison across different age groups. *Brain Injury 17*, 835-836.
- Rios, M., Perianez, J., & Munoz-Cespedes, J. (2004). Attentional control and slowness of information processing after severe traumatic brain injury. *Brain Injury 18*, 257-272.

PARTICIPANT EVALUATION OF MODULE

Name of Module:_____

Date of Presentation:_____

Location of Presentation:_____

Please rate the statements below according to the following scale:

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5. _____ Activities presented were practical and contributed to my learning.

   For instance:

6. _____ All of my questions were answered thoroughly.

   For instance:

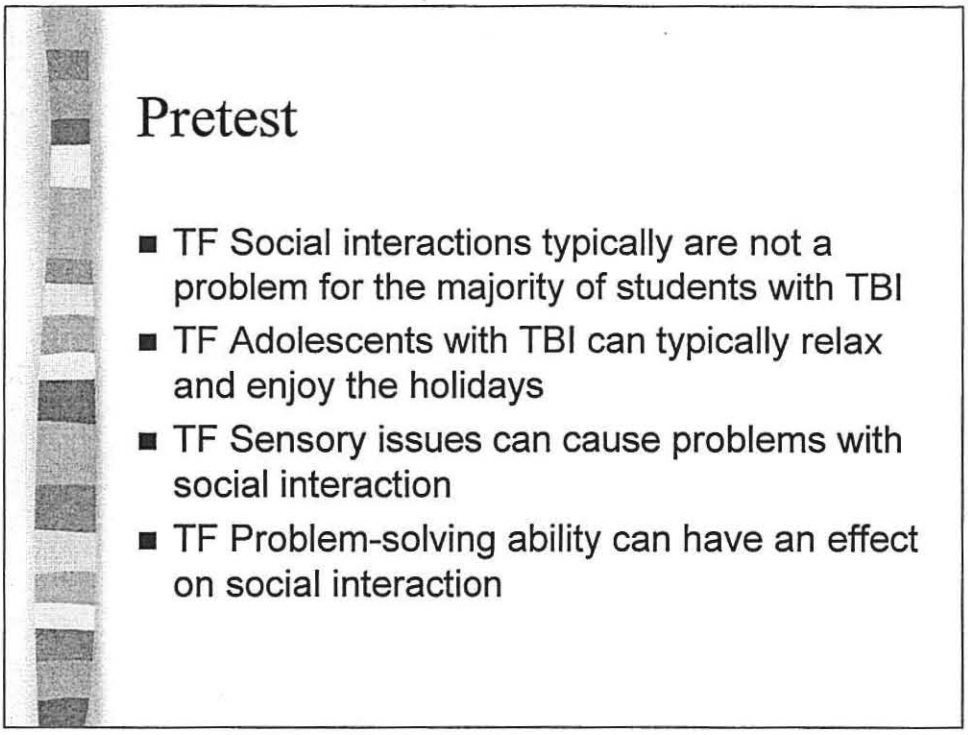
Additional Comments:

MODULE V

SOCIAL CONCERNS

Social Concerns

Brain Injury and its Effects on Social Interaction



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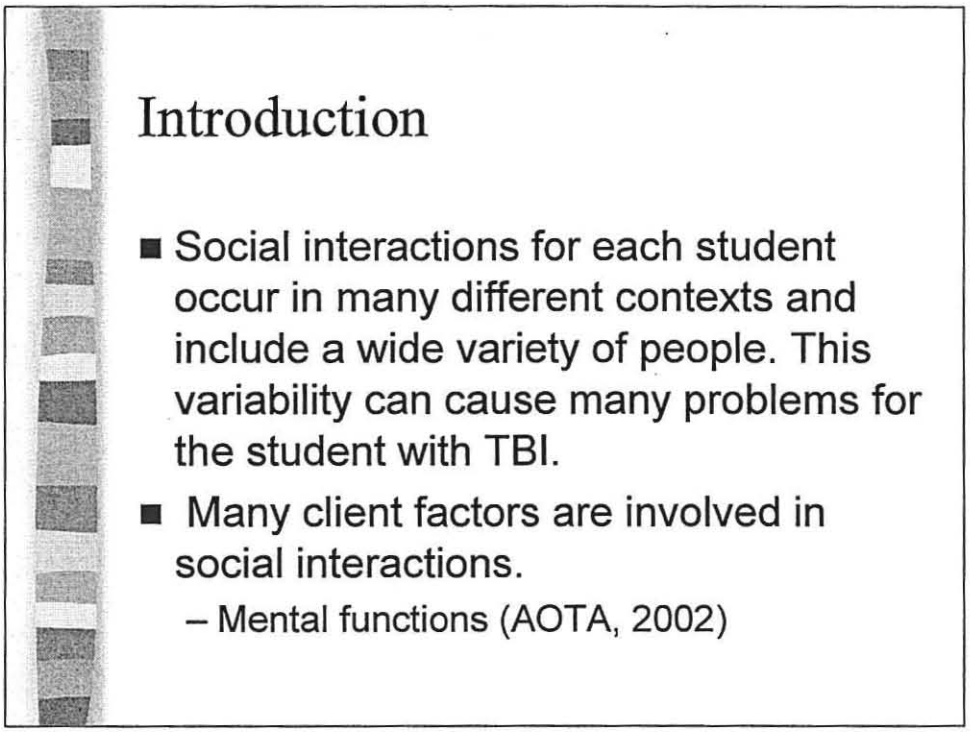


Temperament and personality functions-emotional stability and openness to experience

Energy and drive -motivation, impulse control

Attention

Memory

Perceptual

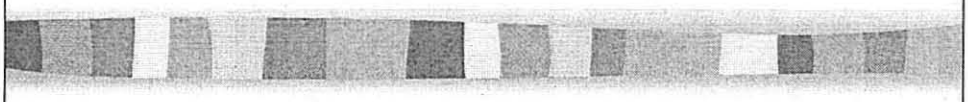
Thought

Problem solving

Introduction continued

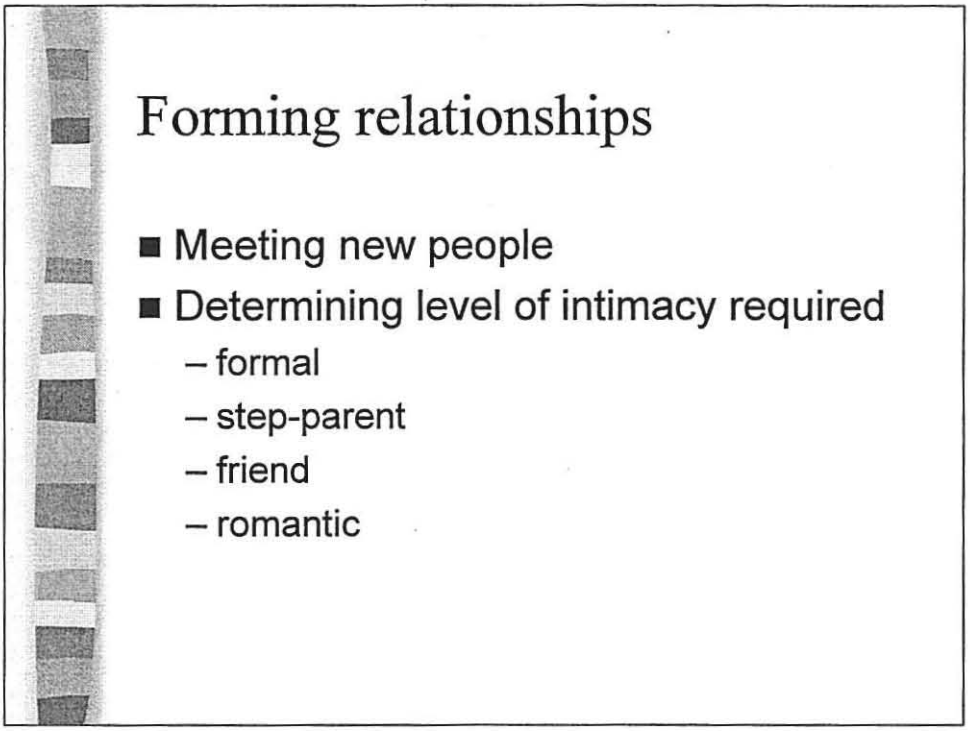
- Social interaction is very important to adolescents
- The student with TBI is no exception. Nearly all children want to make and keep friends.
- Problems with client factors make social interaction difficult for the student with a TBI.

Problems



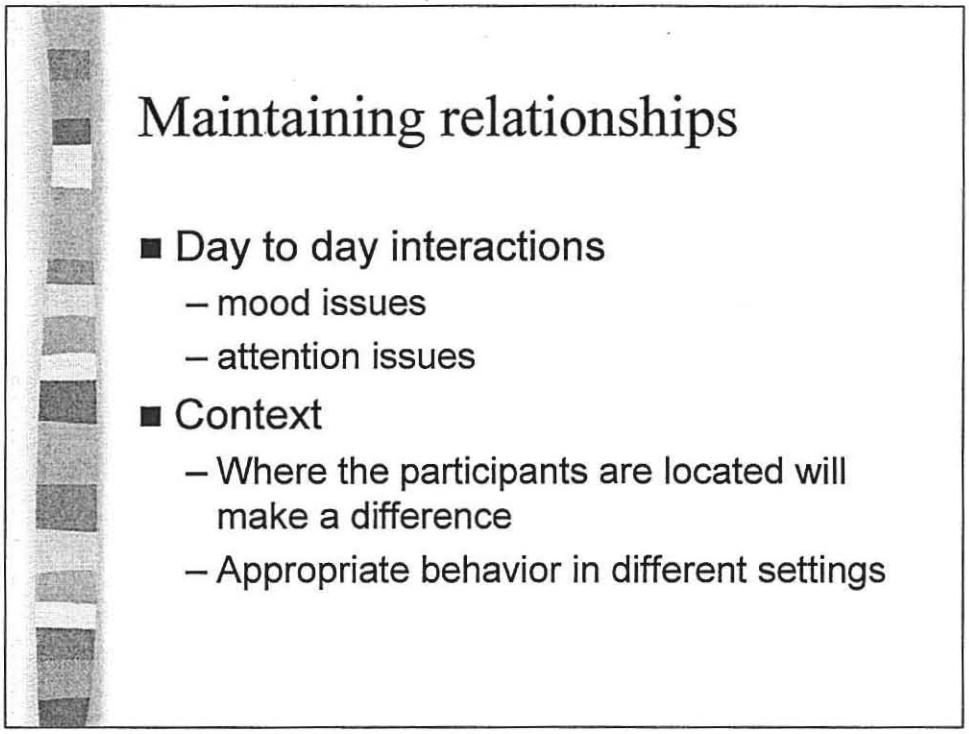
Problems

- Forming relationships.
- Sustaining relationships.
- Terminating relationships.



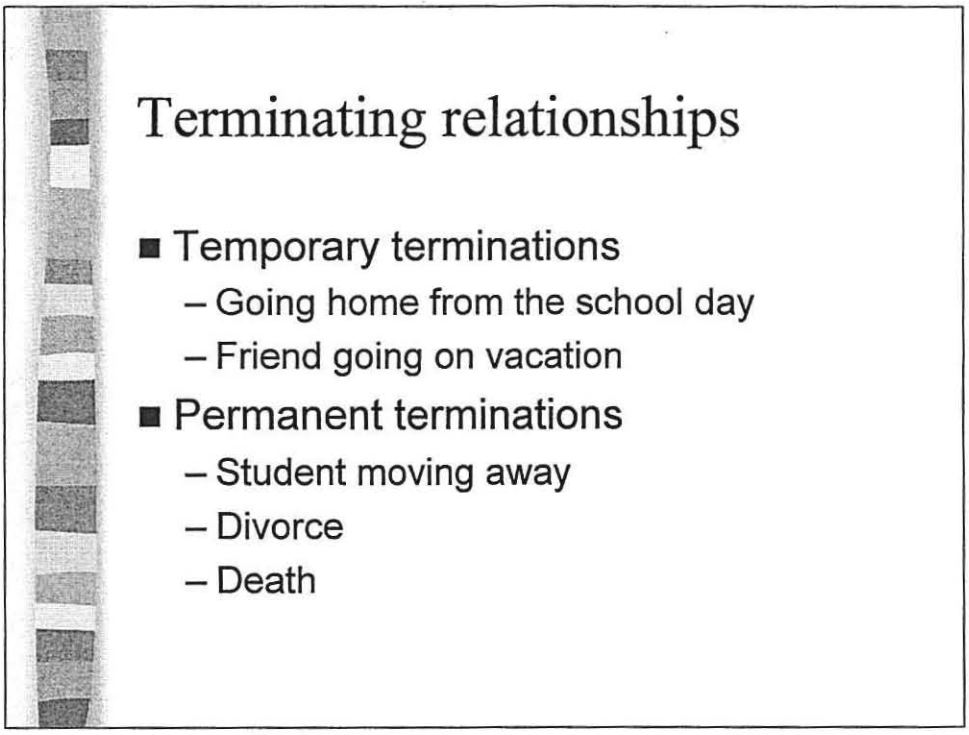
There is a social process for meeting and greeting new people that a student with TBI may have difficulty remembering or understanding. The level of intimacy required in different relationships may be confusing, and the student may demonstrate inappropriate behaviors as a result.

Context plays an important role



Day to day - the student with brain injury may have difficulty controlling mood, or devoting the correct amount of attention at the right time or place.

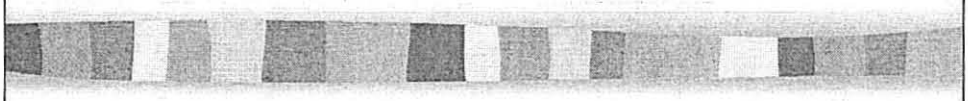
Context - home versus school- friends who exchange a simple greeting in the hallway or at the beginning of class as school will talk much more extensively after school or an one friend's house. The student with TBI may reverse this pattern, or exhibit other problems.
Home, school, or special settings such as games or a movie theatre - different behaviors are expected. Voice levels, display of humor or affection, attention requirements, and many other aspects differ due to context.



Understanding of any of these concepts may be difficult

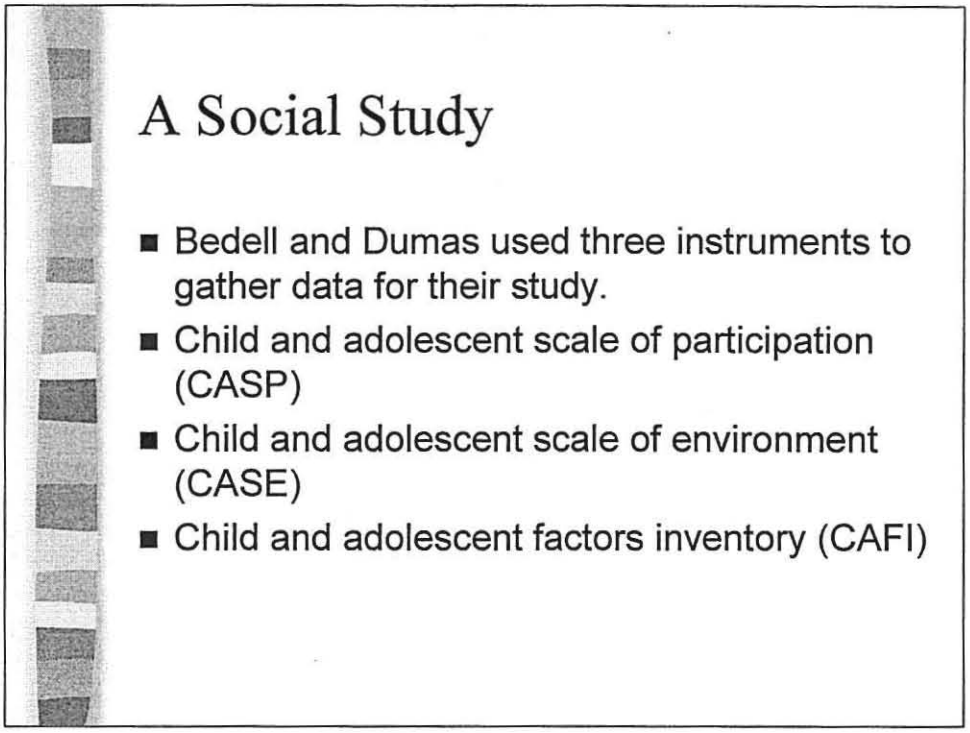
Reactions may be inappropriate, either hyper- or hypoconceptualized

A Social Study



A Social Study

- Bedell and Dumas (2004) conducted a study to determine social participation of youth with TBI. They were concerned with "the nature and extent of participation in home, school, and community life and environmental and child-related problems" (p. 69).

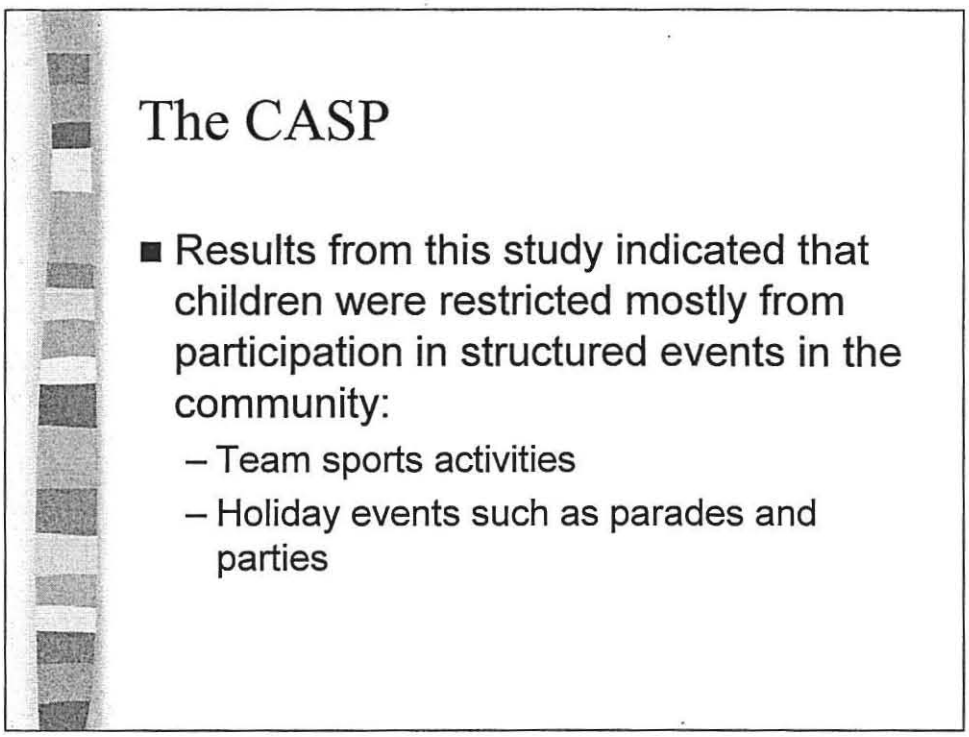


There are 3 of several instruments that can assist professionals with determining Problems that adolescents with TBI may encounter in social situations

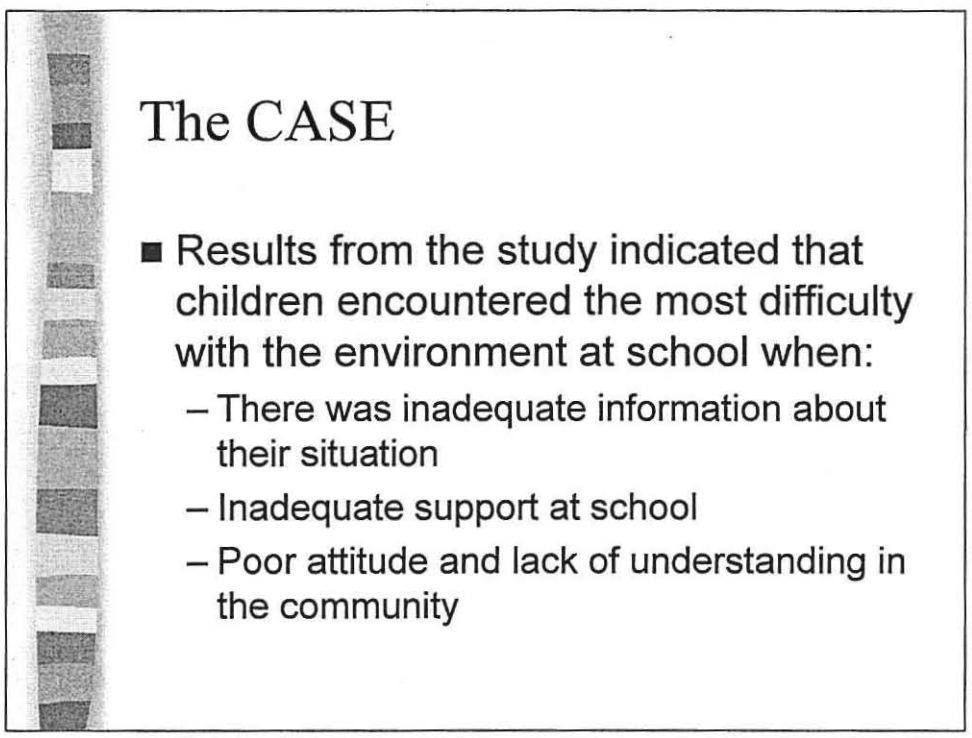
CASP - measures 20 items including social activities, family chores, educational activities, and shopping and money.

CASE - measures 15 items that inquire about problems experienced with the environment, and problems related to availability of services

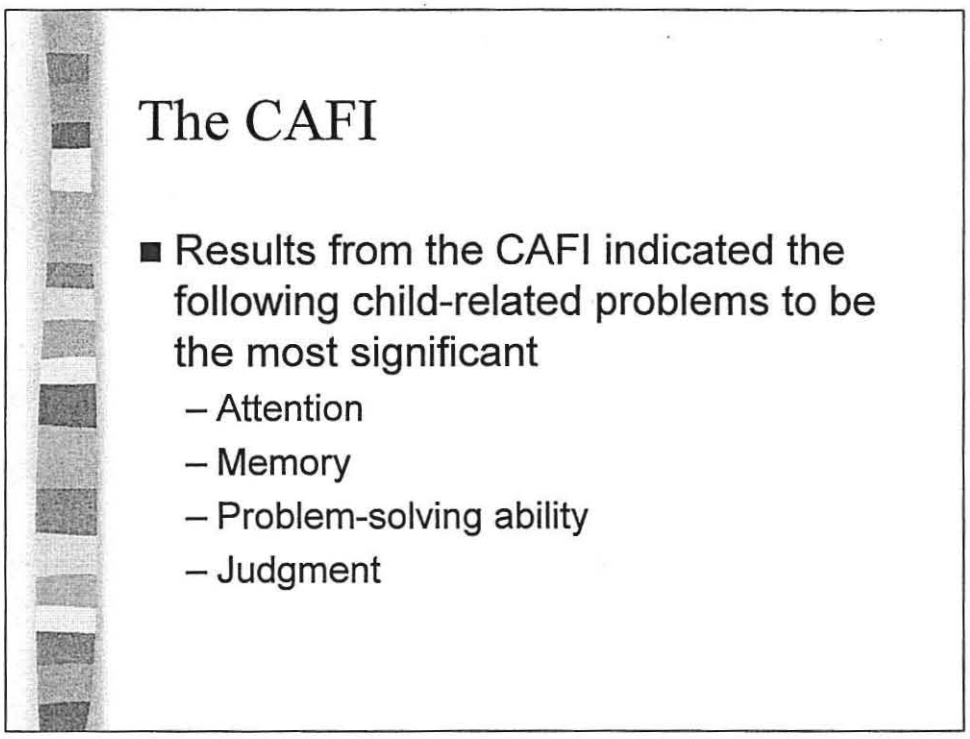
CAFI -10 items related to impairments and child-related factors such as attention, motivation, and problem-solving.



Context is clearly important in these findings



These results are mostly directed at indicating what caregivers need to do to correct context problems

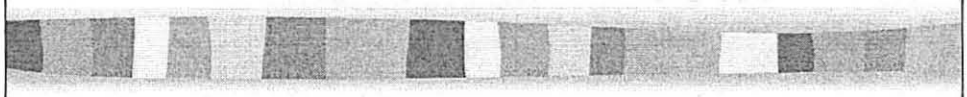


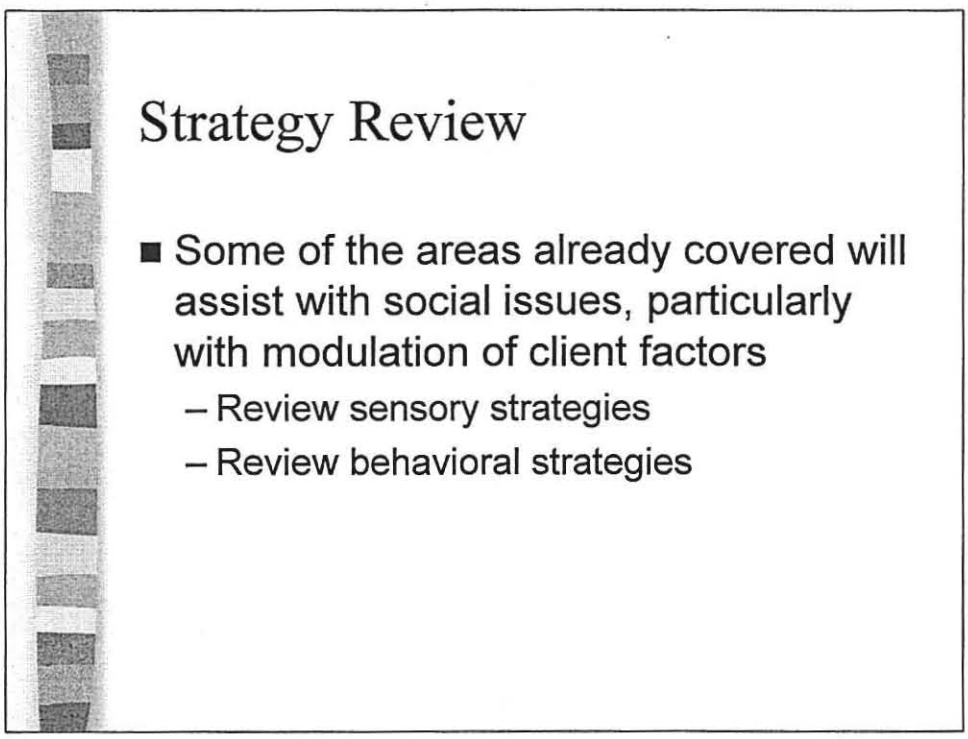
Results are concerned with client factors that influence social reaction and interactions.

Self-Efficacy

- Self efficacy refers to the individual's perception of their own ability to perform in certain situations. Many students with TBI are further frustrated when they realize the restrictions that they are experiencing due to problems associated with TBI. (Passmore, 2004)

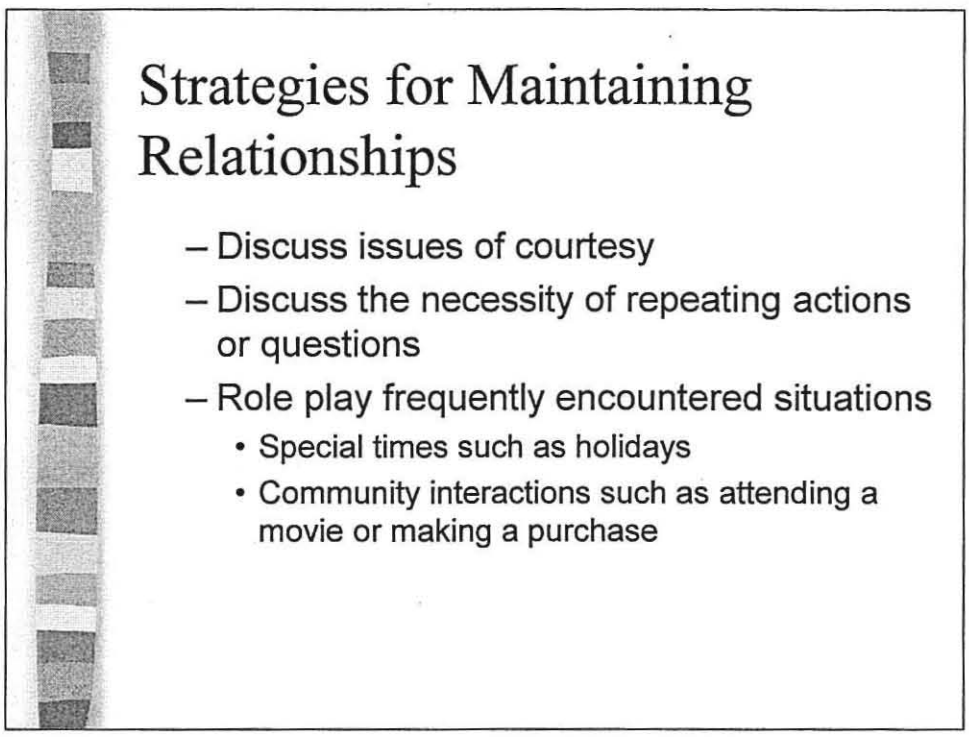
Strategies





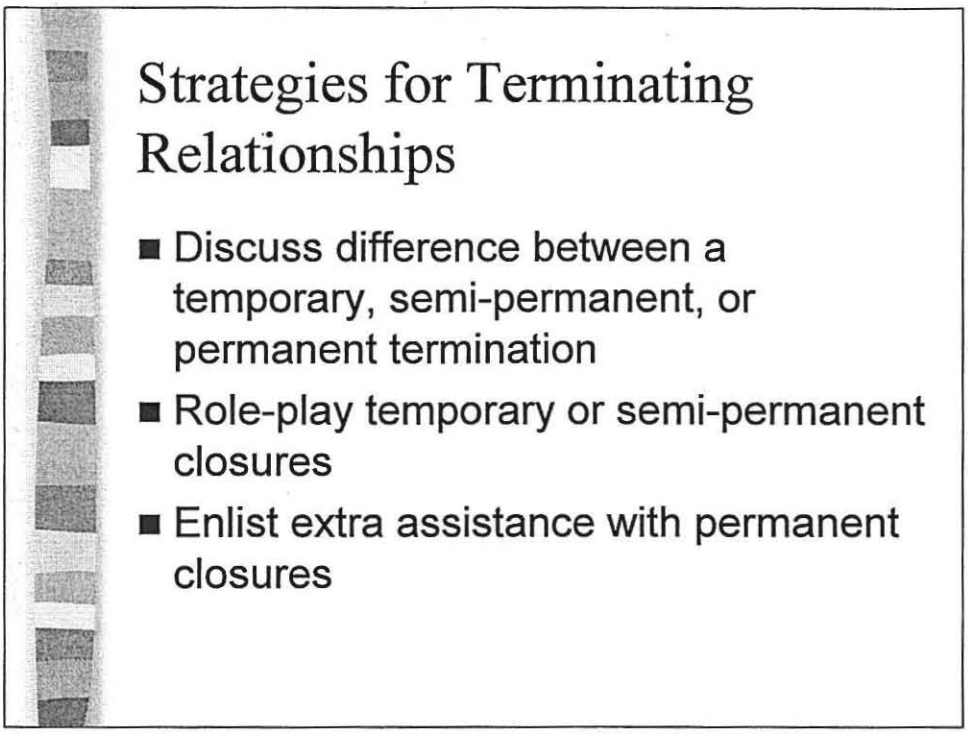
Incorrect interpretation of sensory information can lead to aberrant behaviors which can damage social interactions

Stress recognition of the status of the person being greeted (peer, teacher, school principal) to rehearse formal or informal transaction



Discuss the need to maintain courtesy in day to day relationships. Some courtesies are exchanged much the same way every day - greetings such as "How are you today?"

Correct behavior in daily situations and transitions is critical to maintenance of relationships.

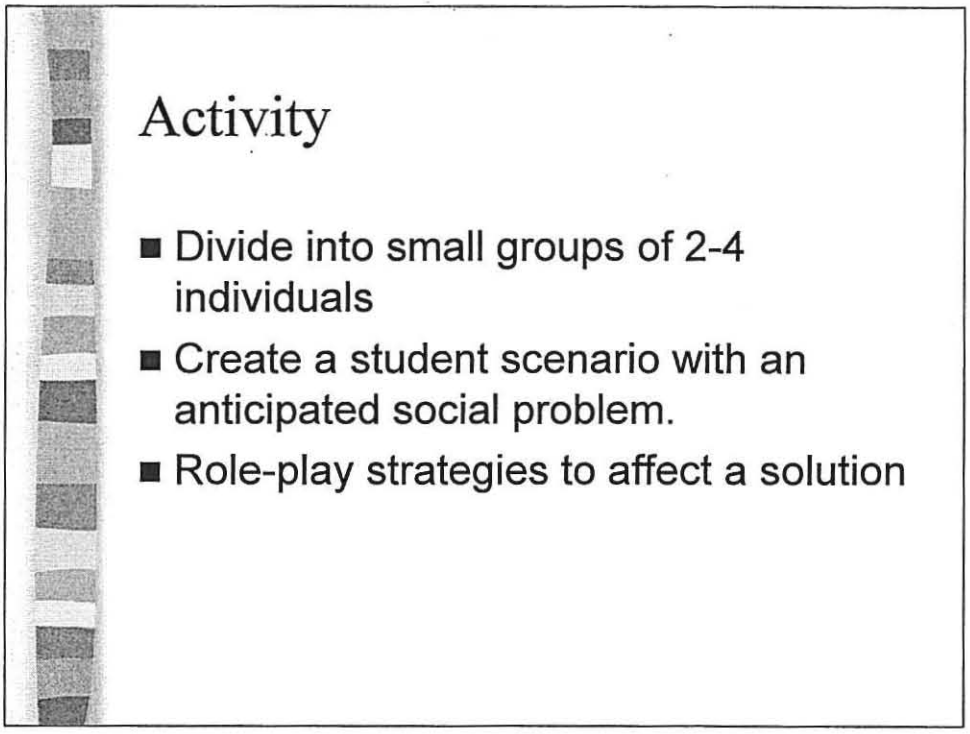


Helping a student through a permanent closure can be very difficult, especially if that student has problems with memory, emotions, and abstract concepts. Enlist assistance from counselors when appropriate, and support strategies implemented by physicians and counselors to assist the student through a difficult time.

Questions??

Post - Test

- TF Social interactions typically are not a problem for the majority of students with TBI
- TF Adolescents with TBI can typically relax and enjoy the holidays
- TF Sensory issues can cause problems with social interaction
- TF Problem-solving ability can have an effect on social interaction



Establish the time constituent of the transaction - forming, maintaining, etc.

The status and level of intimacy required will be established.

Then role play the situation for the rest of the large group.

Describe problems that could occur.

References

- Bedell,G., & Dumas, H. (2004). Social participation of children and youth with acquired brain injuries discharged from inpatient rehabilitation: a follow-up study. *Brain Injury,18*, 65-82.
- Occupational therapy practice framework: Domain and process. *American Journal of Occupational Therapy, 56*, 609-639.
- Passmore A. (2004). M measure of perceptions of generalized self-efficacy adapted for adolescents. *Occupational Therapy Journal of Research, 24*, 64-71.

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6. _____ All of my questions were answered thoroughly.

   For instance:

Additional Comments:

MODULE VI

FAMILY CONCERNS

MODULE VI

FAMILY CONCERNS

Family Concerns

Brain Injury and its Effects on the Family

Pretest

- TF Family distress caused by a child incurring a TBI gradually escalates as time goes on
- TF Problem-solving skills are the strategy most often employed by parents to deal with difficulties
- TF Transition back to school can be difficult for the family
- TF Plenty of information is available to assist parents regarding TBI

F Slide 4

F Slide 11

T Slide 19

F Slides 6,8

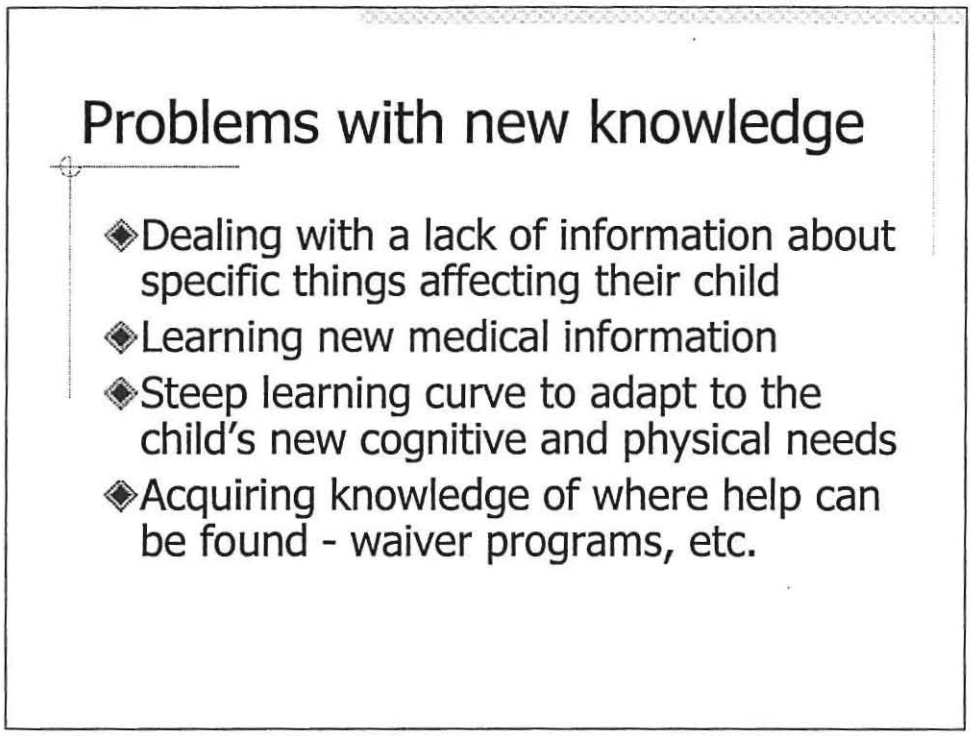
Introduction

- Very few things in life can compare to the emotional, physical, and financial challenges that a family receives when their child suffers a TBI
  - Relationships are strained
  - Resources are challenged
  - Steep learning curve to find and familiarize with new and frightening information and procedures, and routines

Introduction cont'd

- Daily life for the parents and other family members, however, must continue.
  - One piece of good news is that there is evidence that injury-related burden, caregiver distress, and family dysfunction peaks shortly after the injury (Wade et al. 2003).

Problems



The need to determine if a family qualifies for the types of public assistance available is an added burden in the financial area. The processes necessary for this determination may be confusing and time consuming. Also, parents are looking for specific information about their child's particular type and extent of injury, and what exactly can be done to help the situation. Unfortunately, the condition of brain injury is so variable that these types of specifics are rarely found.

Problems with daily routine

- New roles for all family members - may be pushed back into a more intensive caregiver role
- Emotional stress on all family members
- Changes in finances can affect daily routine
- Changes in attitude of friends and neighbors

Siblings may be forced into roles they are not ready to assume.

Discretionary spending may be affected, forcing other children to reduce their activities

Friends and neighbors may not know what to do, or may be fearful or apprehensive around the child due to lack of understanding regarding behaviors.

Problems with return to school

- Inadequate services and programs
- Inadequately informed staff
- Inappropriate attitudes at school

A Family Study

A Study by Benn and McColl

- Benn and McColl (2004) conducted a study to determine what strategies parents use to cope with the stresses associated with their child's brain injury.
- 30 parents were interviewed using the Ways of Coping Scale to collect data for the study

Family study continued

The study narrowed the skills used by parents of children with TBI into 3 categories:

- Problem-solving
- Emotion-oriented
- Perception-oriented

Problem solving strategies focus on altering the stressor.

Emotion-oriented strategies alter the emotional response to the stressor

Perception-oriented strategies alter the perception of the stressor

Perception-oriented strategies were most frequently used by both mothers and fathers

Strategies

(from the Benn-McColl study)

Problem-solving coping skills

- Outlining difficulties and brainstorming solutions
  - Knowing what has to be done and redoubling efforts to make things work
  - Trying to change someone else's mind
  - Standing their ground

Emotion-oriented coping skills

- Sharing or hiding feelings
  - Letting one's feelings out by seeking our friends, family, or support groups (could include school staff)
  - Hiding problems from others to give the impression that they are minimized or do not exist

Perception-oriented coping skills

- Altering one's thinking in some way
  - Discovering or reminding what is important in life
  - Looking for the silver lining
  - Reminding self that things could be worse
  - Finding out more about the problem
  - Change or growth as a person

Other Strategies

- Coping skills
  - No one strategy can work for every child or every situation
  - Parents will typically try many types of strategies
  - Strategies will need to be adapted to suit the child and the situation

Adapting coping skills

- Strategies are customized by the family to meet family needs
- New needs are incorporated
- Gradually some sense of routine returns
- Families can resume their attention to long term concerns and return to earlier modes of interaction internally and in the community (Wade, et al. 2003)

Return to School

Return to School

- Very little information is available for parents from the medical community regarding steps needed for return to school
- This is due, in part, to the individual and unique nature of each case

Transition back into school can be a difficult experience for the family, as they typically encounter problems with information scarcity from both the medical and school community. Only the general aspects of brain injury, if any, may be known by school staff. Specialized knowledge of manifestations of specific types of brain injury are typically not understood by school staff.

Return to school cont'd.

- At school, parents may encounter problems with:
  - Inadequate information about brain injury
  - Inadequate services and programs
  - Lack of support
  - People's attitudes at school (staff and students) (Bedell, & Dumas, 2004)

Return to school cont'd.

- According to Bedell, Cohn, and Dumas (2005) strategies parents use to promote their child's participation as they return to school and community include:
  - Creating opportunities
  - Modifying the environment
  - Finding peers to accompany the child
  - Role playing and problem-solving
  - Establishing routines and setting limits

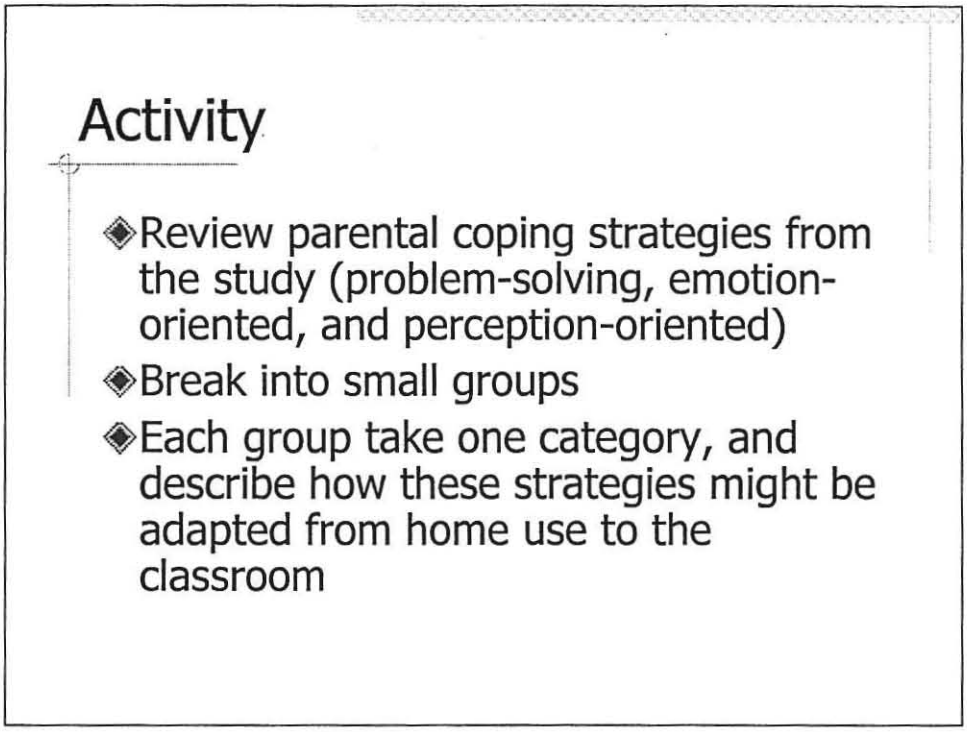
Return to school cont'd

- Parents should be made to feel comfortable collaborating with all school staff who will be working with their child.
- Parents can provide unique and valuable information regarding their child
- Staff must be aware that parents may welcome, or be aversive to, the role of educator for staff regarding the child's needs (remember the emotion-based coping skills)

Questions??

Post - Test

- TF Family distress caused by a child incurring a TBI gradually escalates as time goes on
- TF Problem-solving skills are the strategy most often employed by parents to deal with difficulties
- TF Transition back to school is generally easy for the family
- TF Plenty of information is available to assist parents regarding TBI



Ideally, 3 groups would be best.

Examples:
Problem-solving:
Finding different ways to make thnigs work in the classroom
Educating peers as to the brain injured student's new needs

Emotion-oriented
Schedule staff meetings as necessary to brainstorm solutions
(letting feelings out)

Perception-oriented
Staff will do research together and present to each other to find out more about the students problems
Staff remind each other of all the things the student CAN do.

References

- Bedell, G., Cohn, E., & Dumas, H. Exploring parents' use of strategies to promote social participation of school-age children with acquired brain injuries. (2005). *American Journal of Occupational Therapy, 59*, 273-284.
- Bedell,G., & Dumas, H. (2004). Social participation of children and youth with acquired brain injuries discharged from inpatient rehabilitation: a follow-up study. *Brain Injury,18*, 65-82.

References, continued

- Benn, K., & McColl, M. (2004). Parental coping following childhood acquired brain injury. *Brain Injury, 18*, 239-255.
- Wade, S., Taylor, G., Drotar, D., Stancin, T., Yeates, K., & Minich, N. Interview study of the effects of pediatric brain injury on memory. *Brain Injury 18*, 471-495.

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6. _____ All of my questions were answered thoroughly.

   For instance:

Additional Comments:

MODULE VII

OCCUPATIONAL THERAPY ASSESSMENT

Occupational Therapy Assessment

A Guide to Understanding Procedures

Pretest

- TF Standardized assessments are the only means used by OT's to evaluate student performance
- TF Observation is a type of standardized assessment
- TF Reliability and validity provide information about the quality of an instrument
- TF Standard deviation indicates the student's average score
- TF OT's do not use evaluations to measure progress

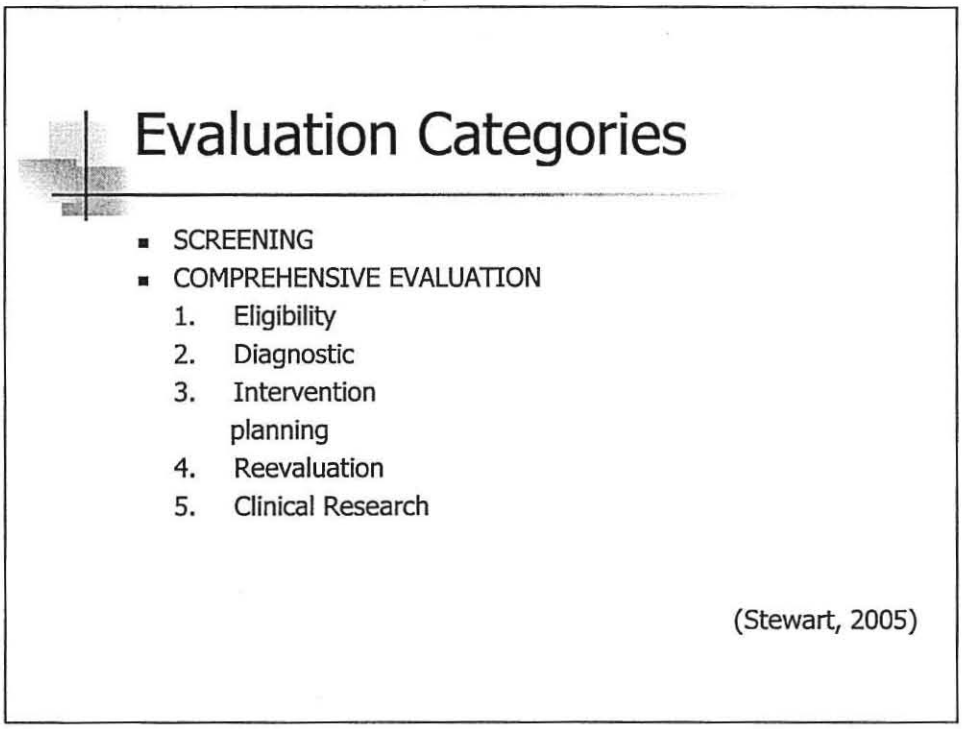
F	Slide 6
F	Slide 6
T	Slides 10,11
F	Slide 15
F	Slide 4

AOTA Definition - 1998

"The process of obtaining and interpreting data necessary for understanding the individual, system or situation" (AOTA, 1998).

Why do OT's assess their clients?

- To establish baseline information
- To determine placement
- To measure progress
- To clarify areas of need
- To guide treatment planning
- To support research

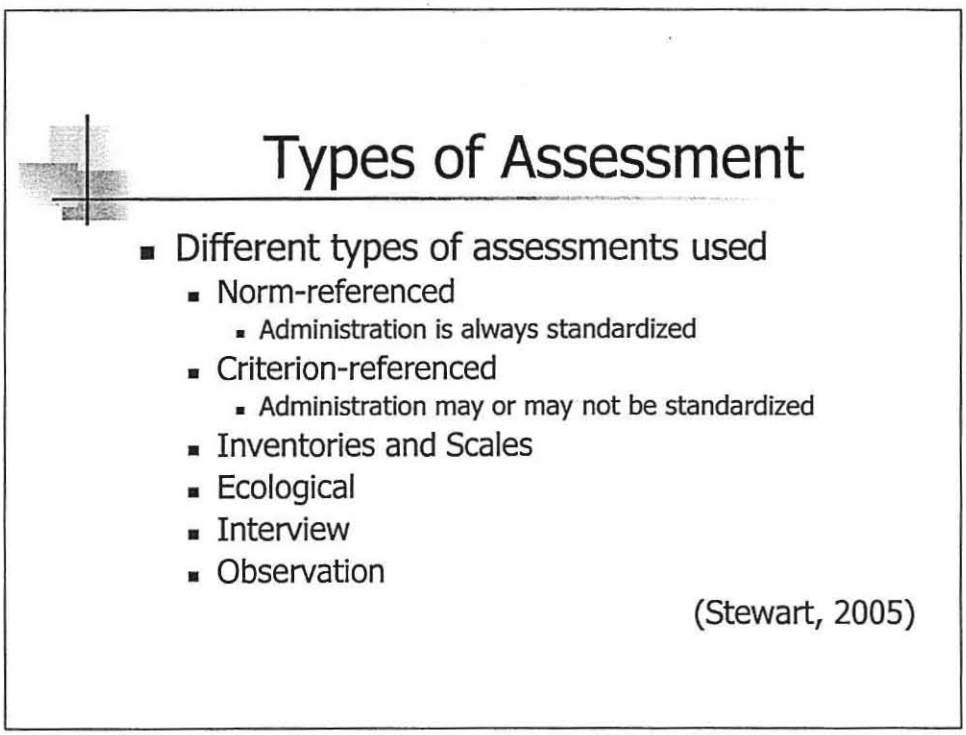


NOTE: Many of the slides in this presentation were adapetd from a classroom presentation developed by Gail Bass, PhD., OTR/L. The classroom lectures developed by Dr. Bass were based on Chapter 7 & 8 in *Occupational Therapy for Children* (2005) edited by Jane Case-Smith. This information is used with her permission via a personal communication July 14, 2006). - the chapter authors are referenced on the slides and in the references

Screening: to determine if a child warrants further, more comprehensive evaluations

Comprehensive Evaluation: offers a clear delineation of strengths and challenges which may lead to a diagnosis, identification of the need for intervention, and/or profile guidelines for intervention

Occupation centered assessment is most concerned with the overall process of participation. Gain an in-depth understanding of a child's abilities and limitations - including features of the environment that may impact the child's ability to function



FORMAL versus Informal

Formal

Norm and criterion referenced tests

Informal

Ecological focuses on environment (can be formal or informal)

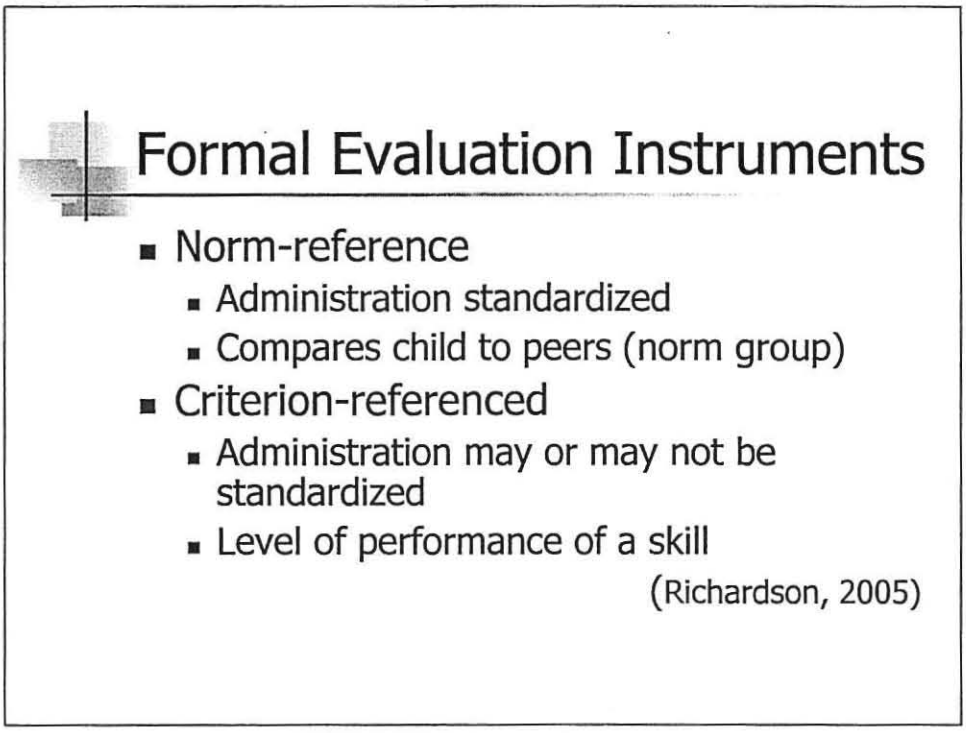
Interviews can include student, peers, caregivers, professionals

Observation can take place in any environment

Inventories and scales used to gather data on a child's development – many follow ages and stages for the areas being addressed – many published scales and inventories are well developed and have existed for a long time- more informal way of collecting data than norm or criterion referenced testing

General Terms

The following slides contain information which will help you to understand test design better



NORM-REFERENCED

Purpose: to examine individual performance in relation to a representative group; can be used to establish age levels, used for diagnosis and placement

Construction: items developed from activities hypothesized to top specified skill or performance; test items usually not related to the object of instruction or intervention

Administration: Must be administered in a standard manner as specified in test manual

Scoring: based on standards relative to a group; normal distribution, variability of score (bell curve with means and standard deviations) is desired. (seep.208)

Compares child's performance to a group / normative sample

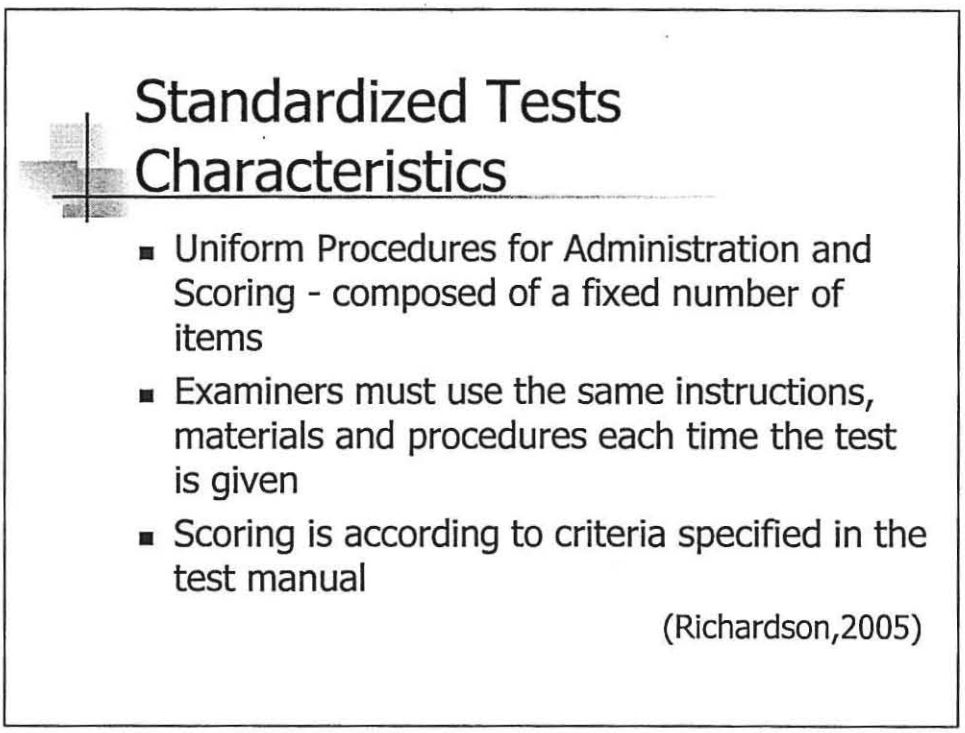
CRITERION-REFERENCED

Purpose: to examine how a child performs on a specific task; the child's skill is compared to a specific criterion – level of performance of a specific skill (cuts on a line, etc.) -

Construction: actual activities – ages and stages – can be used for intervention planning

Administration: may or may not be standardized

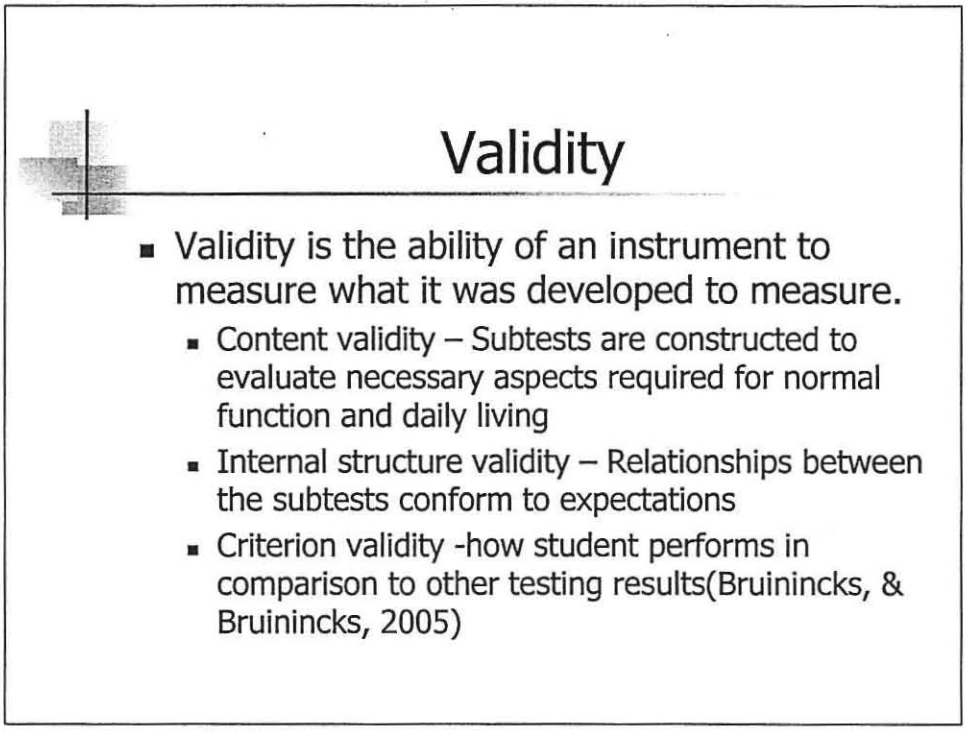
Scoring: compares the child to self – measures the child's performance on specific tasks rather than compare child's performance with that of his or her peers -



The purpose of the standardization is so that all children are given the test the same way with the same directions and materials – note that most standardized test come in a kit with specific materials and supplies that need to be used – if something is not in the kit the manual will describe what additional materials are needed

Reliability

- The dependability of test scores derived from using an instrument
  - Internal consistency – Relationships between the subtests conform to expectations
  - Test-Retest reliability – the stability of a subjects scores over time; example: 2 to 4 weeks
  - Interrater reliability – Measures the consistency of scores arrived at by different examiners testing the same subject (Bruinincks & Bruinincks, 2005)



Content - measure what they are supposed to measure

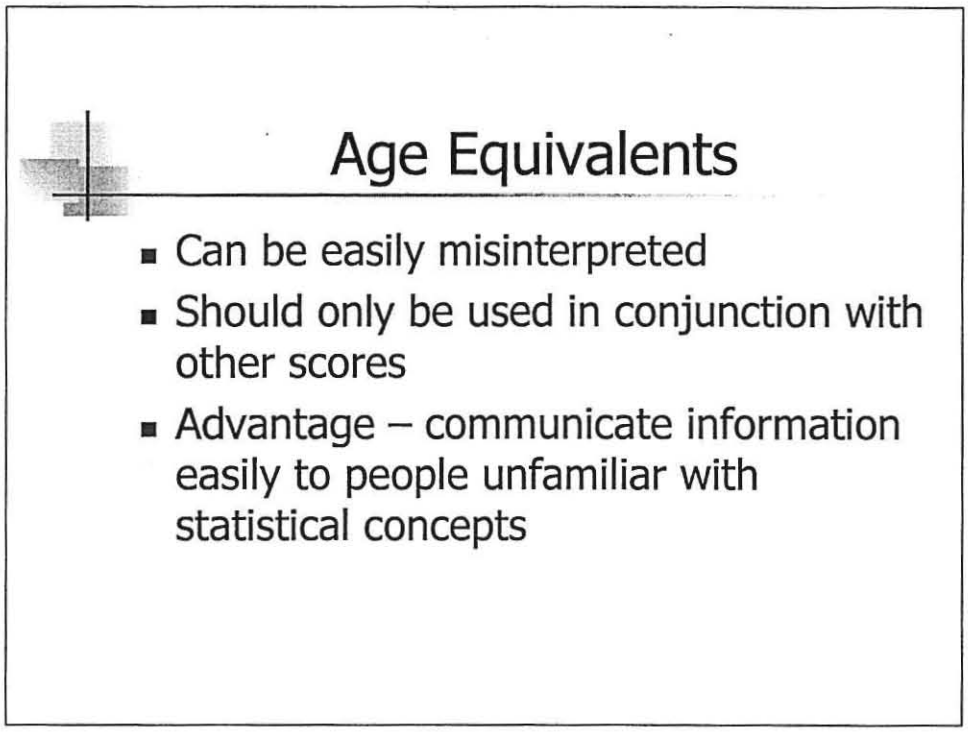
Internal - the items in the subtests fit together and give an accurate picture, for instance,all items in a section on visuomotor are similar, and all contribute to the measuring of visuomotor ability

Scores

- Standard Score - relates the examinee's performance to the performance of the norm group. This score tells the examiner how far the subject's score varies from the average score.
- Scale score- description of the subject's performance over time
- Criterion score - the subject's current performance relative to the overall continuum of participation (Coster, et al., 1998, p. 52)

Percentile Rank

- This score demonstrates the percentage of individuals that the examinee outperformed in his or her age group.
- Advantageous because it is understood by most people, including family members



If a student earns an age equivalent well below chronological age, this information may upset or be confusing to parents, even though developmentally the child may be progressing.

Descriptive Statistics

- Mean-Average score
- Median- Middle score
- Standard Deviation-how far the student's score deviates from the mean

Rasch Model

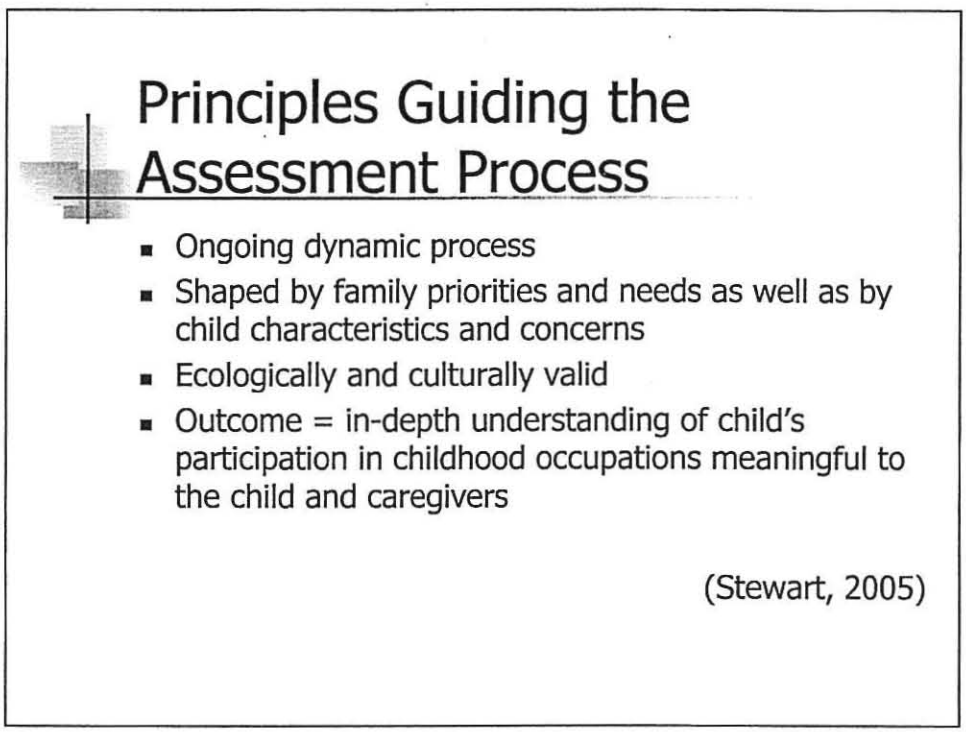
- Hierarchical ranking of items on a test from easiest to the most difficult – creates a linear scale of items
- Different philosophical base than traditional standardized tests

(Richardson,2005)

Just mention this – it is described in more detail on p. 263

Tests developed using this method are not norm referenced because the child is not being compared to a norm sample

Rating scales focus on participation in occupations



Principles Guiding the assessment process

1. Continuing, evolving process rather than a discrete activity that can be initiated and completed at a single point in time
2. Child assessment should be shaped by family priorities and information needs, as well as child characteristics and diagnostic concerns
3. The assessment process must reflect a respect for family values and styles of decision making -cultural sensitivity, language should reflect family preferences etc.

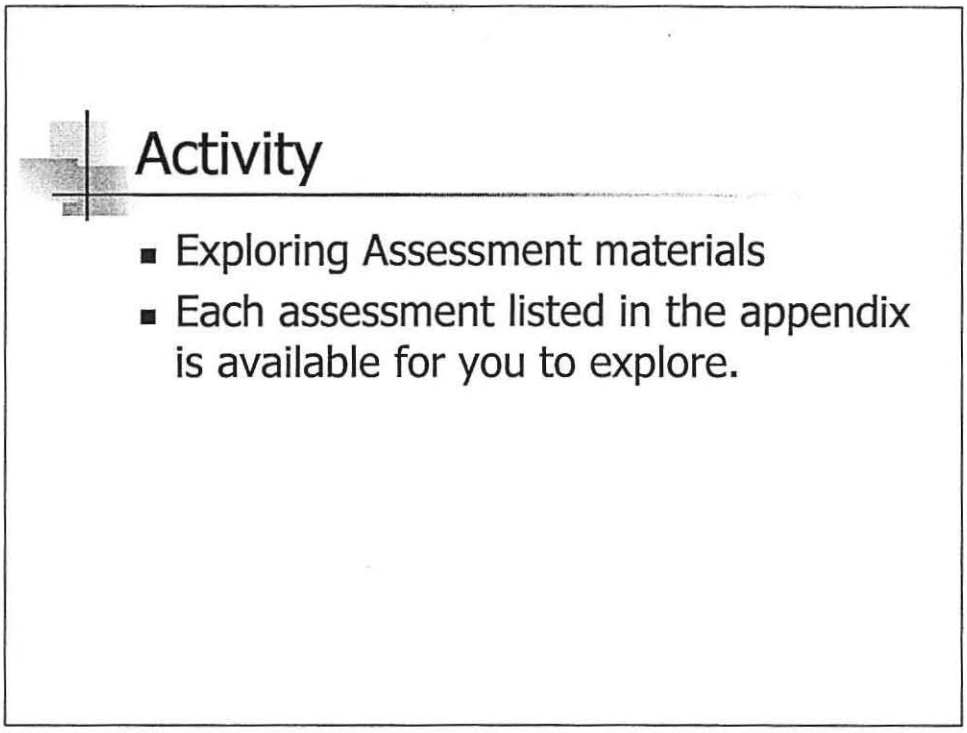
QUESTIONS???

Appendix

- Refer to the appendix for specific assessment descriptions:
- VMI
- BOT-2
- MVPT-3
- SFA
- Sensory Profile

POST TEST

- TF Standardized assessments are the only means used by OT's to evaluate student performance
- TF Observation is a type of standardized assessment
- TF Reliability and validity provide information about the quality of an instrument
- TF Standard deviation indicates the student's average score
- TF OT's do not use evaluations to measure progress



Set up test kits for each assessments on tables in the room
Participants move from station to station, as presenter circulates around tables and answers any questions

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PARTICIPANT EVALUATION OF MODULE

Name of Module:_____

Date of Presentation:_____

Location of Presentation:_____

Please rate the statements below according to the following scale:

1=Strongly Disagree; 2-Disagree; 3=Neutral; 4=Agree; 5= Strongly Agree

1. _____ The information presented in this module promoted my learning.

   For instance:

2. _____ The information was presented clearly and concisely.

   For instance:

3. _____ The strategies are logical and can be applied to my situation.

   For instance:

4. _____ The presenter was knowledgeable and respectful of my circumstances.

   For instance:

5. _____ Activities presented were practical and contributed to my learning.

   For instance:

6. _____ All of my questions were answered thoroughly.

   For instance:

Additional Comments:

CHAPTERV

SUMMARY

The purpose of this scholarly project has been to create training modules to assist teachers and paraprofessionals in school systems as they work with students who have survived a traumatic brain injury. Need and content requirements for this project were established by interviewing professionals in the school setting, and by completing a literature review.

The most significant finding resulting from the search that this author discovered is that no training materials to address this need were readily available on the retail market. Training materials are needed because pediatric brain injury is a major public health concern and a leading cause of death among youth. Other findings include the fact that older children ages 14-18 demonstrate significantly more behavior problems. Children of all ages with TBI experience barriers to participation in school and community events. At school, there are problems with lack of information, lack of programs, and lack of adequate assistance. Parents experience frustration when their children return to school, due to the previously mentioned problems, coupled with a general lack of information available to school staff.

The product of this project consists of seven training modules for teachers and paraprofessionals. The modules address background information needed to understand traumatic brain injury and the occupational therapy process; and the specific problems

that students with traumatic brain injury encounter, and the strategies to assist those students to achieve scholastic success.

Implementation of this project will consist of presenting the training modules to the intended audience in local school districts, and using information gathered from the participant evaluation form to ascertain the effectiveness of the materials presented. A follow-up survey, sent to participants, approximately 6 months after the presentation date may also be used to collect additional data on the impact of the training sessions. The information in the modules will be augmented and revised according to the evaluation results; additional modules may also be developed if there is an identified need. Once this author has implemented this project on a pilot basis, a dissemination packet will be developed. This will include a CD with the presentations and a printed document that has the handouts, activities, and presentation notes pages with expanded notes. It will also include a recommended reading list for the individual who will do the presentation. The training modules are designed to be presented by an occupational therapist or other professional with a background in TBI.

This project is limited to helping teachers and paraprofessionals to serve the needs of a student population that retains sufficient cognitive function to recognize a need for change. In the future, the training modules could be expanded to include information and strategies to assist more severely impaired students. The project is also currently limited to exploring strategies for cognitive and visual concerns. Future expansion may include adding modules to address motor problems and other specific functions.

APPENDIX

Occupational Therapy Assessment for Students with Traumatic Brain Injury

Following is a description of a selection of assessment instruments commonly used by occupational therapists in school districts to evaluate students for education-related occupational therapy needs. It is important for teachers to have a rudimentary understanding of these instruments to be able to collaborate with occupational therapists. A basic knowledge of what these assessments are, and how the information gleaned from them can be used to create a treatment plan for a student can be invaluable to teachers and assistants. Although not responsible for creation of the treatment program itself, teachers and assistants are often indispensable for the delivery of the day-to-day (sometimes many times per day) performance of intervention strategies.

Beery-Buktenica Developmental Test of Visual-Motor Integration 5th Edition (VMI)

Beery, K. E. & Beery, N. A. (2004). *Beery-Buktenica developmental test of visual-motor integration administration, scoring, and teaching manual.* Minneapolis: NCS Pearson.

Description:

The VMI is a developmental sequence of geometric forms to be copied with paper and pencil. Reliability of the VMI is high with regard to inter-rater (.72 to .98) and internal consistency (.76 to .91). Validity in the areas of content, concurrent (comparison to other copying tests), construct, and predictive validity are stated to be high (pp. 99-115). This instrument has a long history of use and has proven reliability and validity over a period of nearly 40 years.

Normative sample and general population:

The VMI was most recently normed in January, 2003, using 2,512 children ages 1-18 in the United States.

Use for students with TBI:

"The Beery VMI is designed to assess the extent to which individuals can integrate their visual and motor abilities (eye-hand coordination). The purposes of the Beery VMI are to help identify, through early screening, children who may need special assistance, to obtain needed services for them, to test the effectiveness of educational and other interventions, and to advance research" (p. 1). Manifestations in students from brain injury that can be evaluated from the VMI include sensory deficits and motor planning.

Bruininks-Otseretsky Test of Motor Proficiency Second Edition (BOT-2)

Bruinincks, R. H. & Bruininks, B.D. (2005). *Bruinincks-Oseretsky test of motor Proficiency.* Circle Pines, MN: AGS.

Description:

The Bruininks-Otseresky Test of Motor Proficiency, second edition, is an instrument used to "measure a wide array of motor skills in individuals ages 4-21" (p. 1). This is another instrument with a long history. The BOT-2's Fine Motor Composite section (primarily used in the district by OT's – the gross motor section is primarily administered by the physical therapists) consists of 4 subtests: fine motor precision, fine motor integration, manual coordination, and upper limb coordination.

Reliability and validity are stated to be high across all areas. Subtest reliability is .80 to .90; test-retest .70 to upper.80's, and interrater reliability is in the .90's. (p. 51-69).

Normative sample and general population:

The instrument is normed for children ages 4-21. The sample of 1,520 children was randomly stratified across sex, age, ethnicity, socioeconomic status, and disabilities.

Use for students with TBI:

Results from this test provide a detailed picture of fine motor performance. The new version of the instrument has a strong visual-motor section. The different task requirements of the BOT-2 require utilization of a variety of listening skills including following directions.

Motor-Free Visual Perception Test Third Edition (MVPT-3)

Colarusso, R. P., & Hammill, D D. (2003). *Motor-free visual perception test* (3rd ed.). Novato, CA: Academic Therapy Publications

Description:

The MVPT-3 tests visual perception without requiring the subject to make graphic responses (p. 16). It is useful when needing to assess students who cannot draw or write, or for students where motor involvement in the testing would be too distracting.

The MVPT in its various editions has a long history of use and is stated to be reliable and valid across all areas. Internal consistency rated .69 to .87; test-retest reliability was .87 to .92. Criterion related validity was .27 to .82. "Reliability evidence suggests that the MVPT-3 can be used with confidence with individuals 5 or above (p. 53). Based on data gathered to date, the MVPT-3 is a valid instrument for use in evaluating visual perception (p. 62).

Normative sample and general population:

The MVPT-3 is normed for use in people ages 4 – adult. The normative sample included 1,856 individuals. It is "used in the educational system to discern visual perceptual differences in children" (p. 17).

Use for students with TBI:

The wide age range of subjects covered by this instrument is an advantage in evaluating older adolescents and young adults. Information derived from this instrument can be useful in determining size and placement of objects used in visual attention, as well as distractibility and attending time of the student.

School Function Assessment (SFA)

Coster, W., Deeney, T., Haltiwanger, J., & Haley, S. (1998). *School Function assessment manual*. San Antonio: Harcourt, Brace and Company.

Description:

"The School function assessment (SFA) is used to measure a student's performance of functional tasks that support his or her participation in the academic and social contexts of an elementary school program. It was designed to facilitate collaborative program planning for students with a variety of disabling conditions" (p. 1).

"The instrument is a judgment-based questionnaire that is completed by one or more school professionals who know the student well" (p. 1). The instrument is comprised of three parts: Participation, Task Supports, and Activity Performance. Reliability is stated as excellent across the internal consistency and test-retest domains. Interrater reliability is difficult to determine because all raters may not observe all behaviors. Validity is also stated to be high (p. 53-60).

Normative sample and general population:

The SFA is standardized for students in grades K-12, or approximate ages 5-13 years . The sample included 363 students with disabilities (p. 48). Although the SFA is not standardized to cover the adolescent population, it is often used as a screening tool or for provision of supplemental information, as the tasks investigated are also required at the adolescent level for successful school performance.

Use for students with TBI:

Manifestations from brain injury that can be evaluated with the SFA include memory loss, behavior, limited sensory issues, and motor planning.

Sensory Profile

Dunn, W. (1999). *Sensory profile user's manual*. USA: Psychological Corporation.

Description:

"The Sensory Profile is a tool for linking performance strengths and barriers with the child's sensory processing patterns" (p. 2). It is composed of a caregiver questionnaire that is distributed to adults who know the child well. Scoring the questionnaire gives results in 7 sensory areas that are reported as typical performance (one standard deviation below the mean or less), probable difference (1-2 standard deviations) and definite difference (more than 2 standard deviations) (p. 30).

Normative sample and general population:

The instrument is standardized for children ages 3-10 years. However, the instrument can be used with older children to provide supplemental information. Reliability and validity are stated to be good across all content areas.

Use for students with TBI:

This information can assist the child with brain injury by identifying over or under-reaction to sensory stimuli that may be interfering with school function.

Miscellaneous Evaluation Strategies

Other methods of evaluation , such as interview (of the subject, or others who are acquainted with the subject) and observation are used to gain a full and clear picture of the manifestations of problems in children diagnosed with TBI. Although less formal, interviews and observations help flesh out the details of the students educational needs profile. It is important to use these methods to obtain an occupational profile for the student. This can include priorities, desired outcomes, perspective, background and experiences, interests, current issues and problems, and activity demands.

Interview

In an interview, questions answered may include: What are the adolescents' concerns regarding engaging in the occupation of student? What areas are successful? What areas are causing risks? What contexts does the student encounter? (AOTA, 2002)

Observation

Observation can be used to fill in the details and gain insight into every possible relevant aspect of the child's situation. It is particularly useful when looking at social interactions, behaviors, and motor planning. Occupational therapists may also review the assessment data and opinions from other professionals on the IEP team to more fully understand the parameters of a student's disability.

Occupational performance is determined after interview, observation, and assessment (AOTA, 2002, p. 617). Once there is a determination of performance level, a frame of reference is selected, and goals and intervention strategies are chosen.

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